

APRIL 6, 1959

# STEEL

The  
Metalworking Weekly

A PENTON PUBLICATION

Page 104...

## How To Use Emotional Factors That Trigger Industrial Sales

Page 115...

## Silicon Carbide Is Going Places

Page 146...

## How To Use Induction Heating

Page 166...

## Coil Processing Lines Pay Off

Page 154...

## McLouth Joins Trend: Builds Self-Fluxing Sinter Plant

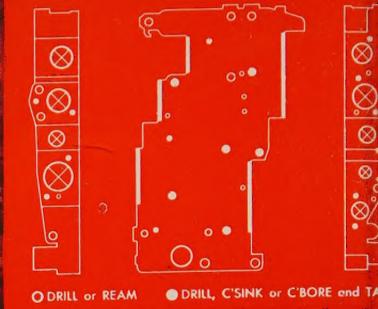
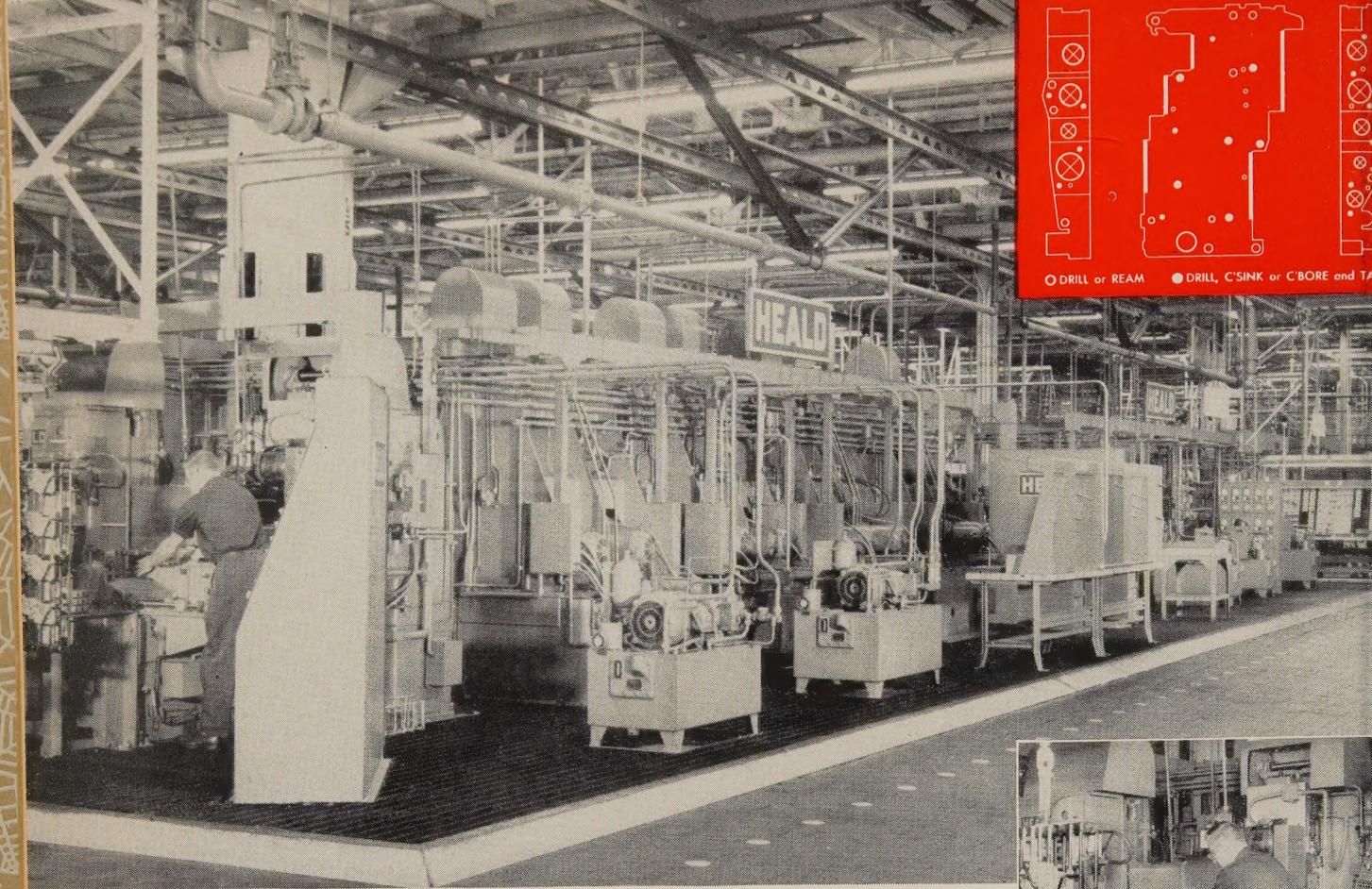
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## Inventory Buildup Continues

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Metalworking  
Outlook  
—PAGE 91



## HEALD AUTOMATED LINE performs 171 OPERATIONS

Two identical 39-station Bore-Matic transfer lines  
drill, bore, ream, tap, face, probe and gage  
48 bores and 5 side faces of transmission valve bodies

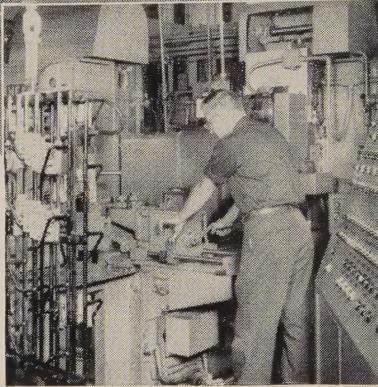
REPRESENTING the ultimate in straight-line automation, these Heald Model S Bore-Matic transfer lines are speeding the precision production of valve bodies at one of America's leading automotive plants.

Each line consists of two 50 foot sections — a 19-station section for the small-bore and semi-finish facing operations and a 20-station section for core drilling, reaming and finish facing. A total of 171 operations (112 machining, 52 probing and 7 air

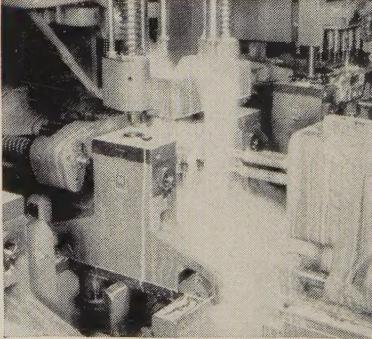
gaging) are performed in a fully automatic palletized transfer line with a cycle time of 18 seconds for each station.

Compared to previous methods, the new Heald system results in less handling and locating of parts, fewer rejects, greater efficiency and substantially lower production costs.

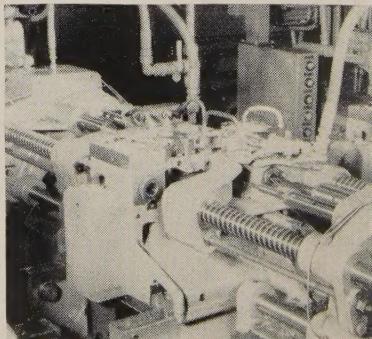
For complete information on this interesting installation, send for a copy of the February 1959 issue of The Heald Herald.



Parts come to machine on overhead conveyor and are semi-automatically loaded onto the transfer line. Push button control console for all stations is shown at right.



Tapping and drilling operation at Station 12. Probing station is shown in the background.



Core drilling of spool bores at Station 4 of the line. Bores are then semi-finish and finish reamed and air gaged for diameter.



*IT PAYS TO COME TO HEALD!*

**THE HEALD MACHINE COMPANY**

Subsidiary of The Cincinnati Milling Machine Co.

Worcester 6, Massachusetts

Chicago • Cleveland • Dayton • Detroit • Indianapolis • New York

R-39

**EDITORIAL** ..... 97

What now, Mr. McDonald? In coming wage talks, the situation calls for statesmanship, especially from you.

**SPECIAL FEATURE** ..... 99



## The Case of the Vanishing Jobs!

for several years, particularly since 1954, jobs had been vanishing. Where had they gone? Why? How many? Acton Chance, STEEL's own private eye, was asked to take on the case—the biggest he ever worked on. He's come up with some answers that'll interest you.

**WINDOWS OF WASHINGTON** 110

Industry might find going rough if Senator Kefauver wins Cabinet level post for the consumer.

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Will big car or little car buying practices prevail after the Big Three introduces its light cars?

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This STEEL study is the result of collaboration by specialists in the fields of motivation, selling, advertising, and magazine publishing. It promises to open new, exciting avenues for more effective selling and advertising to metalworking.	
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STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, \$10 a year; all other countries, \$20 a year; single copies, 50 cents. Metalworking Yearbook issue, \$2. Published every Monday and copyright 1959 by The Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

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# YODER

## Rotary Slitters

Product dependability—integrity of manufacture—engineering for specific production needs have all contributed to establish Yoder equipment as the industry standard of excellence. Since 1909 Yoder-built machinery, including Pipe and Tube Mills, Roll Forming Equipment and Rotary Slitters, have earned world-wide customer satisfaction and recognition.

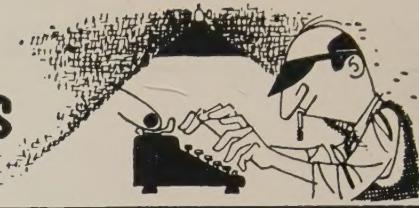
Profit from Yoder's years of engineering and service experience. Send today for the illustrated Yoder Slitter Book.

**THE YODER COMPANY**  
5502 Walworth Ave., Cleveland 2, Ohio

**YODER**  
ENGINEERING  
MANUFACTURING

**ROTARY SLITTING LINES**  
PIPE AND TUBE MILLS  
(ferrous or non-ferrous)  
COLD ROLL FORMING MACHINES

## behind the scenes



### The Doctor Reports

STEEL editors had long toyed with the idea that consumer buyers and industrial buyers were brothers under the skin, and that cliche is no more tired than the thought that industrial advertising is obliged to employ different fundamentals than consumer advertising. With a view toward an endorsement of their thinking, our editors approached Dr. Robert E. Shoaf, motivational research consultant and assistant professor of marketing, New York University, and commissioned him to investigate the mechanics of industrial purchasing.

Dr. Shoaf is no ordinary interviewer; he uses the secret arts of psychology and subliminal stimuli to probe the psyche. (By cracky, that line sounds so impressive we are going to stand for a moment in silent contemplation.) In this instance, he termed his operation a motivation research type study; he interviewed 137 metalworking managers, particularly those functionally engaged in administration, production, engineering, and purchasing, in 14 cities. His report appears this week, beginning on Page 104, and we hope you give it the attention it deserves.

Dr. Shoaf's findings are particularly germane to selling and marketing operations in metalworking. You are welcome to make use of his report—it comes under the heading of STEEL service, you know.

### Imports Vs. Jobs

The story advertised on this week's cover may be brief, compared with such opis (dig that crazy plural!) as *Anthony Adverse* and *Gone With The Wind*, but it carries a message for all of us. A writer who employs the style of a private eye tells us that imports are interesting, but as imports rise, American jobs decline. The problems of tariffs, duties, exports, imports, and free trade began when men came down from the trees and began to make things with their hands, and those problems are still with us.

The author chooses to be anonymous, but we rather suspect Associate Managing Editor John Morgan. He has been observed boning up on literature concerning the St. Lawrence Seaway, the Merchant Marine, international trade, trade union reports, and other subjects closely allied to imports. If he says the rising tide of imports is drowning out many jobs, you can depend on it; he knows what he is talking about. Before he taps a key, he does a thorough job of research. How about your job? Is it safe? If we keep on importing foreign widgets, which are just as good as ours, and twice as cheap, how long do you think you can

continue producing widgets? The story begins on Page 99.

### What Price Germaniums?

G. & C. Merriam Co., Springfield, Mass., dictionary publishers, periodically circulate a pamphlet called *Word Study* for teachers of English. Naturally, the circulation list is select, and you may be surprised that since we didn't rate it by merit, the sample copy we obtained was the first of the theft. In its columns, word sharks keep around stories of words, expressions, and what have you. An item in the October 1958, issue comments on the difficulties confronting the writer who lightly tempts to pluralize flower names. You can say a bunch of roses, or daisies, but how are you going to say a bunch of hibiscus? Hibiscusses? Hibisci? The simplest thing is to switch to buttercups, but that is the coward's way.

We raise the question because readers speak of certain irons, and steels, and what's going to happen if somebody wants to mention other metals in plural form. What, for example, would you do with germanium, columbium, bismuth, berillium, or radium? Perhaps we ought to turn the case over to G. & C. Merriam and turn to sweet potatoes.

### Postal News

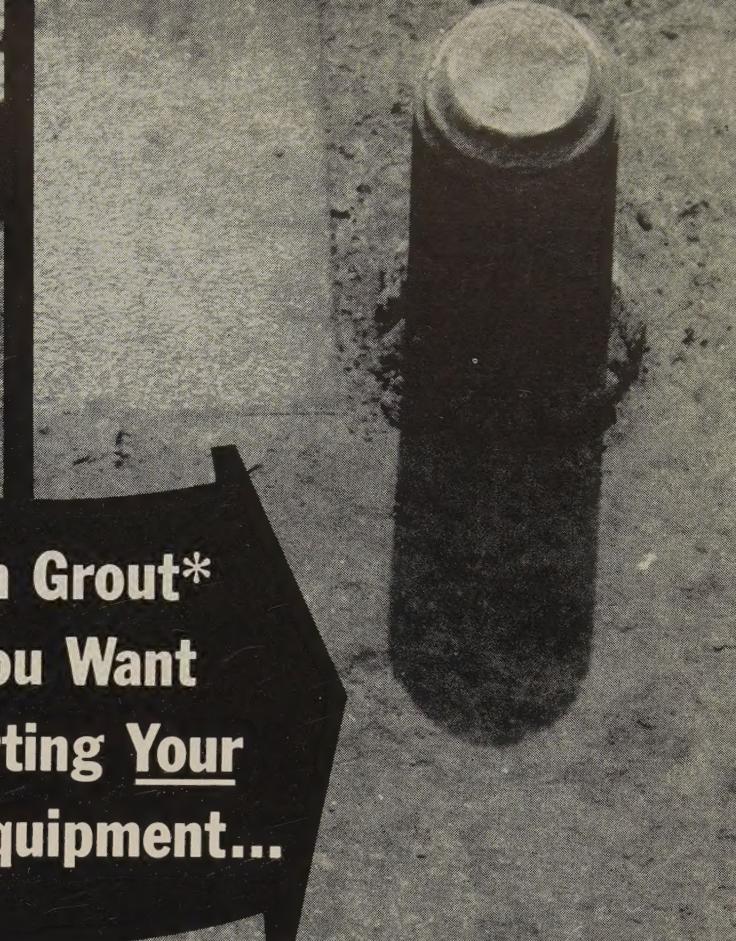
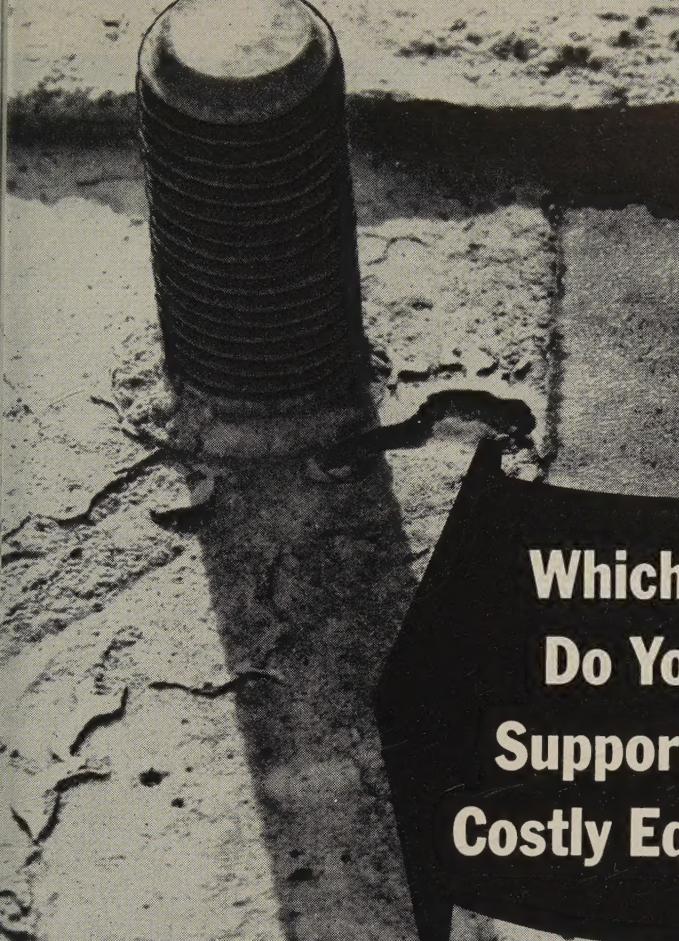
Rand Ebersole, STEEL's efficient distribution manager, keeps right on top of the postal situation by closely reading the *Postal Bulletin*, a weekly produced by the Post Office Department, containing instructions and informations for postal employees. Among other nuggets of interest we learn from the Mar. 19 *Bulletin* that Robert John Widger, for whom a wanted circular was issued by the postal inspector in charge, Denver, is no longer wanted by the postal inspectors.

We'd like to know more about Robert John, but Rand intrudes. "It says here," he began, "that all seed sweet potato and sweet potato plants from any place in Alabama or Georgia should be sent to Monroe, La., for terminal inspection because of the sweet potato mosaic. Now you're a sort of a hillbilly; do you know sweet potato mosaic?"

"Mr. Ebersole, you are pulling our leg. In plant pathology, any of certain viral diseases characterized by mottling of foliage is known as mosaic disease."

You should have seen how Ebersole slunk away. Of course, he had no way of knowing that we had spent the morning with a dictionary!

Shredley

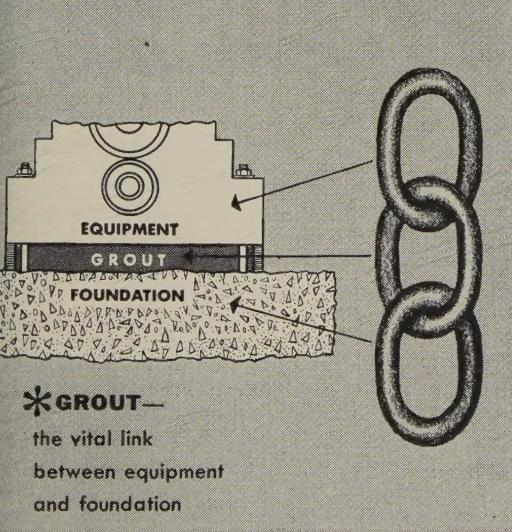


## Which Grout\* Do You Want Supporting Your Costly Equipment...

Plain Grout Shrinks . . .

EMBECO Grout is Non-Shrink . . .

... to withstand: **IMPACT • POUNDING ACTION • VIBRATION •  
SIDE THRUST • TORQUE**



**LEFT PHOTO** . . . Plain Grout shrinks and leaves only a web of mortar and a small shim area to support bedplate . . . results in a short-life grout which causes costly shutdowns, possible equipment damage, and loss of production.

**RIGHT PHOTO**—Embeco Non-Shrink Grout . . . provides full bedplate support, maintains alignment and has high impact resistance . . . is a long-life grout that avoids trouble and cost of untimely re-grouting.

Full information on Embeco Pre-Mixed Grout and "Grouting Specifications"—a valuable guide on machinery and equipment grouting—on request.

*The Master Builders Company, Division of American-Marietta Company. General offices: Cleveland 3, Ohio and Toronto 9, Ontario. International Sales Department: The Lincoln Bldg., New York 17, N. Y. • Branch offices in all principal cities—Cable: Mastmethod, New York.*

# MASTER BUILDERS EMBECO\*

\*EMBECO is a registered trademark of The Master Builders Company for its flowable, non-shrink grout

**Now you can do both . . .**

# SHORT RUNS LONG RUNS

*...Drilling and/or Tapping...*

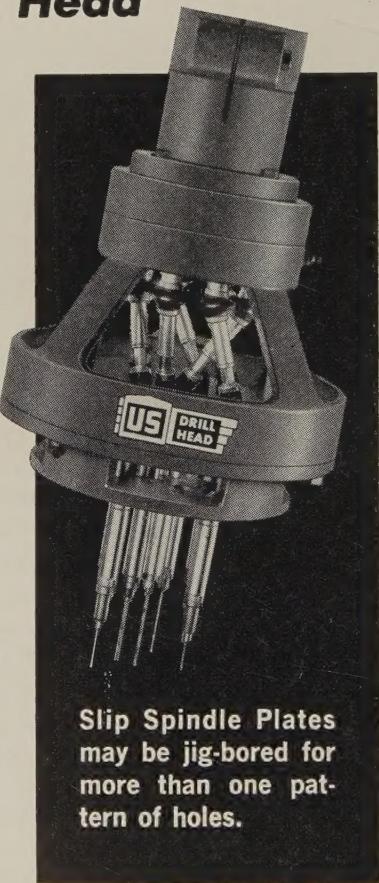
**with ONE adjustable  
U. S. Drill Head**

Complete versatility for job shop operations with standard adjustable arms . . . or, equip these heads with U. S. Slip Spindle Plates which are jig-bored for positive alignment to fit the hole pattern. Eliminates trial-and-error in set up.

Double Duty Tools — when your drilling machine has a reversing spindle, you can drill and tap the same hole pattern with one head.

U. S. Drill Heads are fast and rugged — designed and built for profit-making performance. Positive all-gear drive with shaved gears, anti-friction bearings, and oil-tight housings assure smooth and accurate operation.

*Ask for Catalog AD-57, or send  
specifications of your requirements.*



**Slip Spindle Plates  
may be jig-bored for  
more than one pat-  
tern of holes.**



Adjustable and Fixed Center Multiple Drilling Heads.  
Individual Lead Screw Multiple Tapping Heads.

UNITED STATES DRILL HEAD CO.

BURNS STREET • CINCINNATI 4, OHIO

**LETTERS  
TO THE EDITORS**

## Impressed with STEEL's Subjects

We are pleased with the article, "Conveyor Sales Rebound" (Mar. 16, p. 6). Will you send us a dozen tearsheets to circulate to our trade salesmen?

I think this is an excellent time for us to congratulate you on the splendid magazine you consistently publish. We are quite impressed with the broad scope of subjects covered and the education obtained from them.

Hubert F. Green

Sales Manager  
Speedways Conveyors Inc.  
Buffalo

## A Look at Depreciation



We feel that one of industrial America's most frustrating problems is the rigid and outdated federal system of tax depreciation.

As a long range policy we believe the government should adopt a replacement cost approach to depreciation for federal income tax purposes. By allowing the taxpayer to use replacement cost as the basis for his depreciable assets, tax deductions would match true income. Various methods of suitably providing for increased costs of fixed asset replacement should be recognized, with choice of alternative methods left to each taxpayer's own election. It is believed that replacement cost depreciation should be prospective in operation to reduce the impact on tax revenues.

Meanwhile, legislative action should be taken to extend the 20 per cent initial depreciation allowance to include the cost of all property acquired during the year instead of being limited to only \$10,000 of cost as at present under the 1958 Small Business Tax Revision Act.

Immediate legislative or administrative action should be taken to permit the use of the taxpayer's book allowance for depreciation on new additions. This would avoid the costly and time-consuming maintenance of separate records for depreciation for tax purposes.

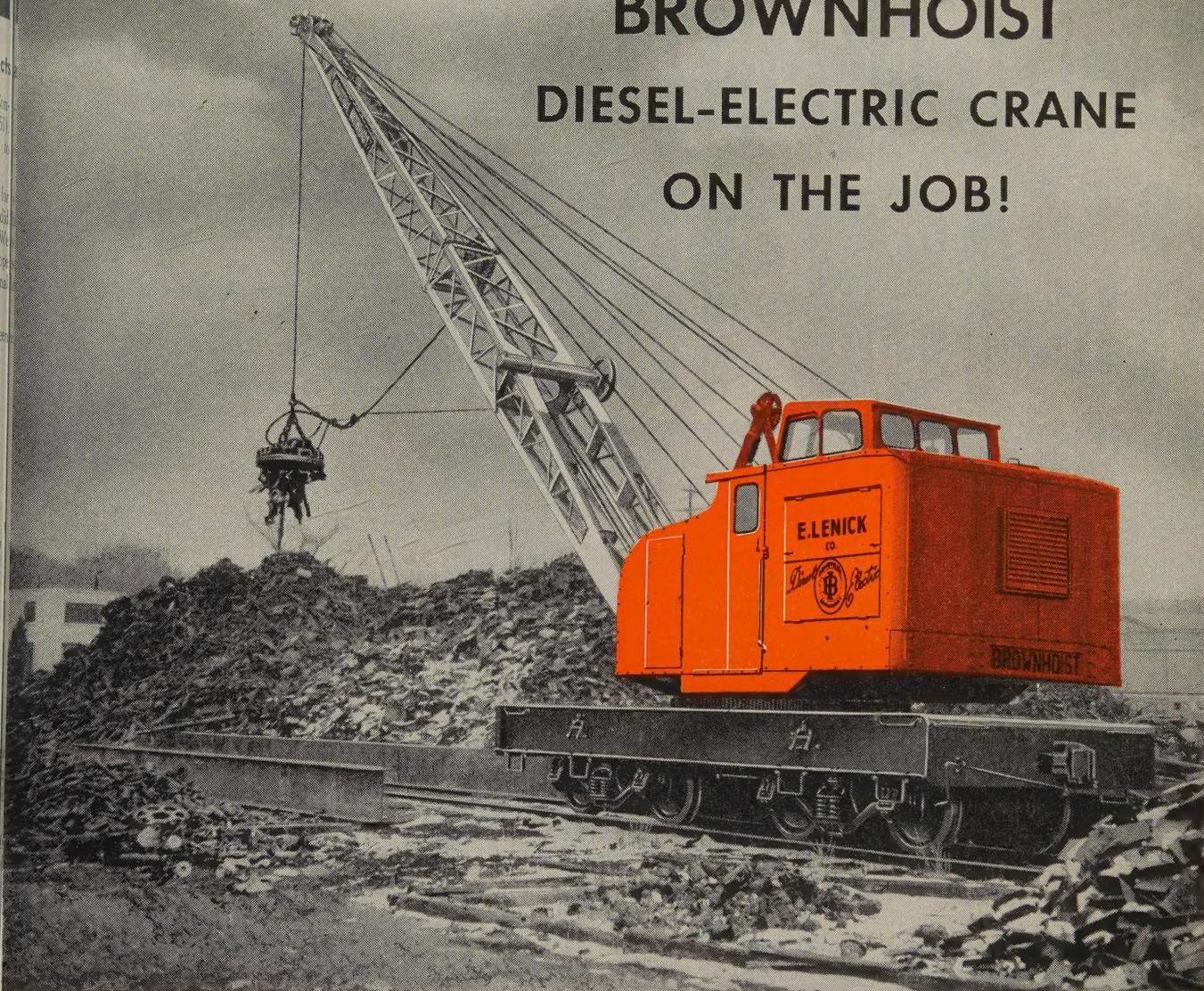
A step toward a solution to update the treatment of depreciation under general tax policies would be a revision to provide for realistic lives of production equipment together with recognition

*(Please turn to Page 12)*

# BROWNHOIST

## DIESEL-ELECTRIC CRANE

### ON THE JOB!



211

One of the big scrap dealers in the midwest, E. Lenick & Company relies on an Industrial Brownhoist 25 Ton Diesel Electric Locomotive Crane for high-capacity production and trouble-free, economical operation. The Diesel Electric Locomotive Crane is built in capacities from 25 to 90 tons. Utilizing a clam-shell bucket, hook or magnet, this versatile equipment handles materials at sea ports, steel mills, ore and coal docks and in railroad yards

throughout the world. Such high performance features as exclusive 360-degree monitor-type cab, clear-vision boom, straight line power train and electric rotation have made Industrial Brownhoist Diesel Electric Locomotive Cranes the world's most reliable high-speed, high capacity material handling equipment.

For more information on specialized equipment in any tonnage and capacity, write for Industrial Brownhoist catalog #562.

# BROWNHOIST



CLAMSHELL BUCKET 250 TON WRECKING CRANE COAL-ORE BRIDGE



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LOCOMOTIVE CRANE

**INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICHIGAN • DISTRICT OFFICES: Cleveland, Philadelphia, Chicago, San Francisco, Montreal.**

• **AGENCIES:** Detroit, Birmingham, Houston

**SHEPARD NILES**

**LETTERS**

(Concluded from Page 10)

future obsolescence based upon current usefulness.

To prevent abuse of depreciation allowances, capital gain arising on the sale of depreciable assets should be treated as ordinary income except to the extent that the sales proceeds exceed the original cost of the asset sold.

E. V. Old

Assistant Comptroller  
Chrysler Corp.  
Detroit

**Article Evokes Interest**

Your special report, "Steel Takes on Warmth of Color and Feel" (Mar. 9, p. 73), has evoked considerable interest among our personnel. We would appreciate having six copies of this for our library.

Hugh Abercrombie J.  
Advertising and Public  
Relations Dept.  
Mesta Machine Co.  
Pittsburgh

**Wants Story for House Organ**

I would like permission to reprint the article, "Inexpensive Chromates Give Zinc Surfaces Color Appeal" (Jan. 12, p. 74) in a house organ which we distribute to the men in our plant. I believe this article would be of interest to them.

V. M. Provo

Purchasing Agent  
Editor, *The Slab*  
American Zinc Co. of Illinois  
East St. Louis, Ill.

• *Permission granted.*

**A Friend's Recommendation**

A good friend has just given me a copy of "Building Marketing Men" (Sept. 22, 1958, p. 69) with the recommendation that I read it carefully.

I found this article most interesting and would like to get three reprints if they are still available.

D. W. Sargent J.  
New England Sales Office  
Anaconda Aluminum Co.  
Needham Heights, Mass.

**Not a Standard Lubricant**

We note with interest the article, "Paint Coating Adds to Draw Die Life" (Feb. 2, p. 82). This is not a "standard lubricant."

We are suppliers of the specialized lubricant used over oxalate undercoatings. In this case, it is Lube-a-Tube #14-V, formulated for drawing stainless steel tubing.

We would appreciate bringing this to the attention of your readers who might run into difficulty should they try to draw such tubing with a standard lubricant.

John H. Richards  
G. Whitfield Richards  
Philadelphia

# Large Industrial Cranes

# 1 to 450 TONS

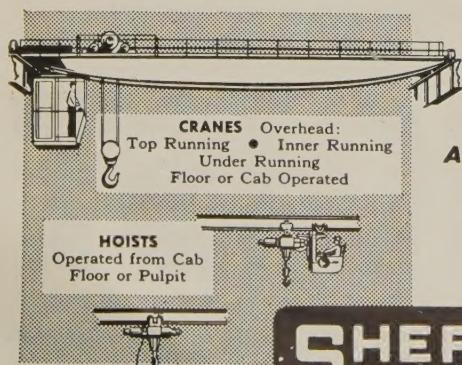


**FOR OVER 50 YEARS**, Shepard Niles has been a distinguished name in cranes. A pioneer in the overhead crane industry, Shepard has never failed to modernize and progress through the years. Today its cranes serve thousands of satisfied users, plus an ever-increasing number of new customers.

Shepard offers a complete line of heavy industrial cranes . . . from 1 to 450 tons . . . for light, medium or heavy service. Available for constant or intermittent duty in slow, medium and high speeds; operated from cab or floor. Let a Shepard Niles representative help you select the crane that best fits your plant's load-handling requirements.

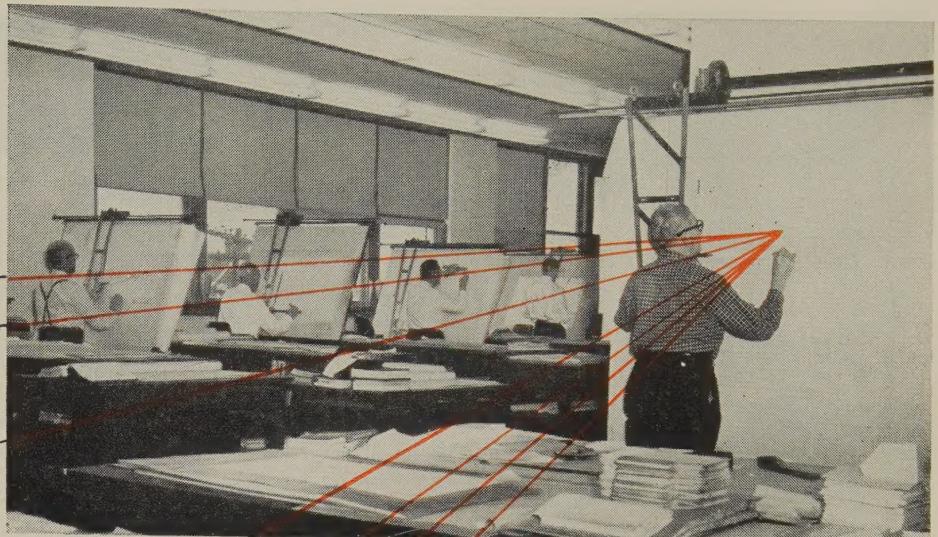
- Write for latest Bulletin . . . request a representative to call.

**America's Most Complete Line  
of Cranes and Hoists  
Since 1903**



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2384 Schuyler Ave., Montour Falls, N. Y.



Through the advance thinking of LANDIS research and development new threading equipment is constantly being introduced . . . improved to do the job faster, easier and at less cost.

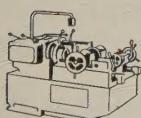
LANDIS has within the last several years produced many new developments . . . the LANROLL Thread Rolling Attachment . . . the LANHYROL Thread Rolling Machine . . . the LANDMACO C-Type Threading Machines . . . Taper Thread Rolling with the LANROLL Attachment . . . the Automatic Coupling Tapping Machine . . . Thread Rolling Heads . . . and even now new products are on the drawing boards and the testing floors. Recently released was our new production type high speed LAN-NU-ROL Thread Rolling Machine. Each of these machines and tools was designed to improve a specific threading operation. For example, new sizes and types of Die Heads and Collapsible Taps now available are suitable for many jobs that in the past could not be threaded by this equipment.

These new additions to our line emphasize our policy to continue product expansion whenever a need exists. Today, we offer the most extensive line of threading equipment available anywhere. Perhaps one of your threading jobs could be done more efficiently with a modern machine or tool developed from our half-century experience in a single field—THREADING. For detailed information, please send specifications and describe type of operation.

## LANDIS *Machine* COMPANY

WAYNESBORO • PENNSYLVANIA • U. S. A.

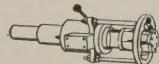
THE WORLD'S LARGEST MANUFACTURER OF THREADING EQUIPMENT



Threading Machines



Die Heads—Rotary & Stationary



Taps—Collapsible & Solid Adjustable



Centerless Thread Grinding Machines



Thread Rolling Tools

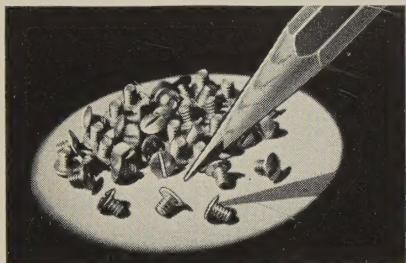


Thread Rolling Machines



*Manufacturers of  
Cold Headed  
Fasteners  
Since 1888*

**OVER 5 TIMES  
THE RATE  
AT 45% LESS COST**



**Another example of how  
Hubbell Cold Heading  
produces Better Parts at  
Faster Speeds, at Lower Cost**

**THE PART:**

Special 1-64 Miniature Binding Screw

**THE MATERIAL:**

18-8 High Tensile Stainless Steel

**THE METHOD:**

Hubbell Cold Heading in place of screw  
machining

**THE RESULT:**

a. Production increased from original  
rate of 7000 pc. p.d. to cold heading  
rate of 40,000 pc. p.d.

b. Cost reduced 45%

c. Finer Quality—More Economical  
Production

1. Higher Tensile Strength
2. Cleaner, Stronger Threads
3. No Scrap Waste
4. No Separation from Chips

*Hubbell Cold Heading may pro-  
vide equally dramatic results for  
you. Whether it is presently cold  
headed or not, send blueprint of  
part or sample for analysis and  
estimate.*

**HARVEY HUBBELL, Inc.** Machine Screw Dept.  
Bridgeport 2, Connecticut

Kindly estimate on the enclosed  
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Name .....

Title .....

Company .....

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# CALENDAR OF MEETINGS

pr. 6-8, American Hot Dip Galvanizers Association Inc.: Annual meeting, Empress Hotel, Miami Beach, Fla. Association's address: 1806 First National Bank Bldg., Pittsburgh 22, Pa. Secretary: Stuart J. Swensson.

pr. 6-8, Metallurgical Society of AIME: Annual conference of the national open hearth steel committee and the blast furnace, coke oven, and raw materials committee, Sheraton-Jefferson Hotel, St. Louis. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: R. W. Shearman.

pr. 6-10, American Welding Society: Welding show and technical meeting, International Amphitheatre and Sherman Hotel, Chicago. Society's address: 33 W. 39th St., New York 18, N. Y. National secretary: Fred L. Plummer.

pr. 7-8, Building Research Institute: Annual meeting, Penn-Sheraton Hotel, Pittsburgh. Institute's address: 2101 Constitution Ave., Washington 25, D. C. Technical secretary: Harold Horowitz.

pr. 8-9, Malleable Founders' Society: Market development conference, Wade Park Manor Hotel, Cleveland. Society's address: 1800 Union Commerce Bldg., Cleveland 14, Ohio. Executive vice president: Lowell D. Ryan.

pr. 8-10, National Industrial Conference Board Inc.: Annual conference on atomic energy in industry, Hotel Statler-Hilton, Cleveland. Board's address: 460 Park Ave., New York 22, N. Y. Secretary: Herbert S. Briggs.

pr. 12-17, National Association of Architectural Metal Manufacturers: Annual meeting, Monteleone Hotel, New Orleans. Association's address: 228 N. LaSalle St., Chicago 1, Ill. Executive secretary: William N. Wilson.

pr. 13-17, American Foundrymen's Society: Annual meeting and engineered castings show, Sherman and Morrison Hotels, Chicago. Society's address: Golf and Wolf Roads, Des Plaines, Ill. General manager: W. W. Maloney.

pr. 13-17, American Management Association: National packaging exposition, International Amphitheatre, Chicago. Association's address: 1515 Broadway, New York 36, N. Y.

pr. 14-15, American Institute of Electrical Engineers: Conference on electric heating, Bellevue-Stratford Hotel, Philadelphia. Institute's address: 33 W. 39th St., New York 18, N. Y. Secretary: N. S. Hibshman.

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April 6, 1959

**The Case of the Vanishing Jobs**

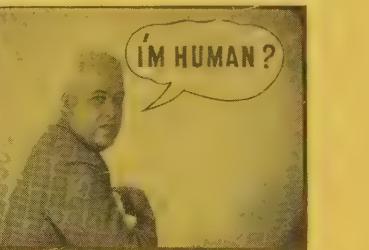
Since 1954, rising imports and declining exports have directly canceled 66,230 jobs in steel, autos, and machine tools. Indirectly, the job losses are much higher. In effect, those jobs have migrated overseas. How to bring them back? Narrow the wage gap between U. S. and other workers. In steel, for example, American workers get two to eight times what their counterparts overseas are paid (Page 99).

**Kaiser to Join Steel Negotiations**

Kaiser Steel Corp. is joining the ranks of 11 other steel producers who will bargain with United Steelworkers. The move should strengthen management's hand this year. Kaiser did not participate in the 1956 negotiations and its plants were not closed in the nationwide strike. After this year's first meeting, May 18 in New York, negotiations will be recessed until June 1, when talks will begin between each side's four-man team. Steelmakers represented will include Allegheny Ludlum, Armco, Bethlehem, Colorado Fuel & Iron, Great Lakes, Inland, Jones & Laughlin, Kaiser, Republic, U. S. Steel, Wheeling, and Youngstown Sheet & Tube.

**Here's How to Sell 'Emotionally'**

Here's news for your sales force: The industrial buyers they face every day are human beings. Watch your sales curve once your salesmen learn the buyer nurses many conventional ambitions and desires. STEEL's Marketing Workshop staff can tell you how to beard this buying lion in his office—and sell him (Page 104).

**Labor Sees Spring Job Pickup**

Steel, electrical, and fabricated metal industries are among those in which the Labor Department expects a "slight to moderate" employment upturn this spring. Substantial unemployment (over 6 per cent of the labor force) exists in 74 major U. S. cities. Eleven of these cities have 12 per cent unemployment.

**Rails See Second Quarter Upturn**

Twelve per cent more railroad freight cars will be loaded this quarter than in the same period of 1958, forecasts the Association of American Railroads. Biggest gain, 44.8 per cent, will come in the Great Lakes region; the Alle-

gheny area will be up almost 30 per cent. Gains of 12 to 16 per cent are expected in the Northwest, Pacific Coast area, and Midwest. Predicted increases in shipments of metalworking products: Ores, 63 per cent; iron and steel, 48 per cent; vehicle parts, 29 per cent; nonferrous metals, 11 per cent.

### New Roles for Versatile Silicon Carbide



A form of silicon carbide may solve a high temperature problem for you. A relative old-timer in abrasive uses, it is now finding work as a structural material which can be formed into complex shapes. The superrefractory is used in rocket thrust nozzles and can stand up to hellish combustion chamber temperatures of 5000° F.

Watch for it to appear in new electrical applications, even in your wife's jewelry (Page 115).

### Titan Will Be Retained

Even after Minuteman (the solid fueled ICBM) goes into production, liquid fueled Titans will continue to be built, says the Pentagon. The Titan can handle a much bigger payload than the Minuteman; it will be stocked at permanent bases. The Minuteman may be mobile enough to be fired from railroad launchers. Even with the Atlas ICBM operational this year, it will most likely give way to the Titan next year.

### Soviet Exports, Imports Rise

Soviet Union imports and exports rose between 1955 and 1957: Imports went up 29 per cent, exports 26 per cent. The U. S. Bureau of Mines says mineral and metal exports are increasing faster than the overall export rate: Minerals are 68 per cent and ferrous shipments 80 per cent higher (Page 102).

Total Exports		
1957	1956 (In millions)	1955
\$4,381.5	\$3,669.2	\$3,468.6
Total Imports		
\$3,937.8	\$3,613.1	\$3,060.6

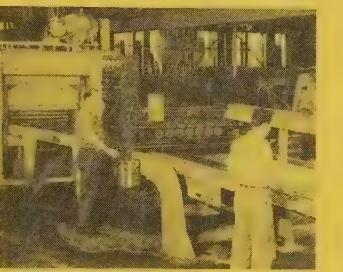
### Lockheed Links Missiles with Ships

Lockheed Aircraft Corp. is entering the shipbuilding industry with the acquisition of Puget Sound Bridge & Dredging Co., Seattle. Lockheed sees a tremendous future for the Navy's submarine launched, solid fueled missile, Polaris, and wants to build the submarines as well as the missiles. Navy plans call for 15 Polaris launching subs, but pressure on Capitol Hill may boost the program to 27 vessels by 1962. The submarines will cost about \$100 million each.

## GE Rents Industrial Equipment

If you need an expensive instrument for short term usage, you might want to take advantage of a loan plan sponsored by General Electric Co. GE has established a pool of 13,000 measuring instruments for rental, available through the firm's nationwide chain of service shops. You may, for example, rent a de luxe \$1500 oscilloscope for \$75 a month, maintenance free. The array of available instruments ranges from audience reaction meters to tuning forks.

## Costs Topple in Switch to Coil Handling



Steel coil processing will enable General Fireproofing Co., Youngstown, to save 5 per cent in steel costs alone this year; overall operating savings may come to 10 per cent. By switching from the use of sheets, the metal furniture manufacturer wastes less steel in shearing, can adjust specifications rapidly to meet a fast moving market (Page 166).

## Factory Built Homes Set Record for Year

Production of 110,080 factory built home units broke all previous records in 1958. Gain over 1957 was 18 per cent. The Home Manufacturers Association reports that the industry accounted for 11 per cent of the 977,300 new, single family homes started in the U. S. last year. Distribution of the houses was heaviest in Ohio. Illinois, Pennsylvania, and Indiana ranked next in that order.

## Induction Heating Can Trim Costs

If there's a hardening, annealing, forging, or extrusion operation in your plant, induction heating equipment may help you get more from your heating dollar. Case studies collected by Westinghouse Electric Corp., Baltimore, show its effective use in several applications. Heat is developed rapidly, right in the material being processed; so there's no thermal lag and minimum scale (Page 146).



## Coal Wages Up, but Some Prices Down

Last week, soft coal miners' wages went up 80 cents a day, but cost of bituminous fuel to some electric power companies went down. That came about as a result of co-operation between the coal industry and railroads to pare freight rates to meet the competition of imported residual oil, which some eastern seaboard utilities had threatened to use. The 80-cent wage

boost is part of the \$2 coal wage package negotiated earlier; \$1.20 of it went into effect Jan. 1. Miners' wages today are 60 per cent higher than they were ten years ago, but soft coal at the mines is priced slightly lower.

### Little Woman Heads for Washington

It's possible: Your wife may win appointment to the President's Cabinet. A march of the little women on Washington is in the offing if Congress passes Sen. Estes Kefauver's (D., Tenn.) bill proposing a federal consumers' department. Such an agency could probe into consumer goods industries, distribution setups, and prices. The plan for a direct voice in Washington has long been pushed by consumer groups; it seems to have Congressional support (Page 110).



### Federal Subsidy Set for Shipbuilding Project

The Federal Maritime Board will subsidize 48.3 per cent of building costs for four cargo ships, under a \$44 million contract signed with American Export Lines. In fixing the subsidy, the board used Japanese construction costs for comparable vessels as a standard. The subsidy will amount to the differential between U. S. and Japanese costs. The ships will be built jointly by National Steel & Shipbuilding Corp., Morrison-Knudsen Co., Henry J. Kaiser Co., Macco Corp., and F. E. Young Construction Co., at National Steel's shipyard in San Diego.

### West Germany Opens 'Big Board'

First experimental steps are being taken to transform West German industry from state ownership to capitalism by selling industrial shares to the public. Government ads urge socialist minded workers to buy while prices are low (\$42 shares for \$34.80). Initial offerings are small but eventually the government hopes to get out of business altogether, leaving \$1.7 billion worth of mines and factories to ownership by individuals.

### Straws in the Wind

Underwriters are offering \$75 million in Armco Steel Corp. 4.35 per cent sinking fund debentures. Armco will apply the proceeds toward cost of additions and improvements . . . General Electric Co. has cut prices on silicon controlled rectifiers. The cuts range from 6 to 44 per cent . . . The U. S. Chamber of Commerce argued against Sen. Estes Kefauver's (D., Tenn.) bill S. (11) proposing to restrict price reductions unless they are offered to all customers . . . A fleet of 28 U. S. warships, led by the heavy cruiser *USS Macon*, will steam into the Great Lakes in June as part of St. Lawrence Seaway opening celebrations in 23 cities.

April 6, 1959



# What Now, Mr. McDonald?

Within the next few days, your United Steelworkers of America executive committee will map the strategy for the coming wage talks with the steel industry. Its recommendations presumably will be endorsed by your 170-man wage policy committee meeting Apr. 30 and May 1.

When you meet with representatives of steel industry management in New York on May 18, you will have 42 days to negotiate before the June 30 strike deadline arrives.

Most people think that the steel industry will begin pulling the fires from its furnaces on June 29 because it fears you will not agree to anything less than a "billion dollar" package.

In the meantime, many users of steel products may have loaded up on supplies that will carry them well through the third quarter.

If the strike lasts for more than a couple of months, consumers can call on foreign steel producers for fill-in supplies. As you know, steel imports have been rising; exports have been falling. The result is fewer jobs for American steelworkers.

Equally important to you are the rumblings in Washington. President Eisenhower thinks the settlement should show moderation. He doesn't want an increase in prices.

Vice President Nixon's new Cabinet Committee for Economic Growth is studying ways to expand the economy without wage-price inflation.

Sen. Estes Kefauver warns of mounting pressure for government wage and price controls to stem the tide of rising prices.

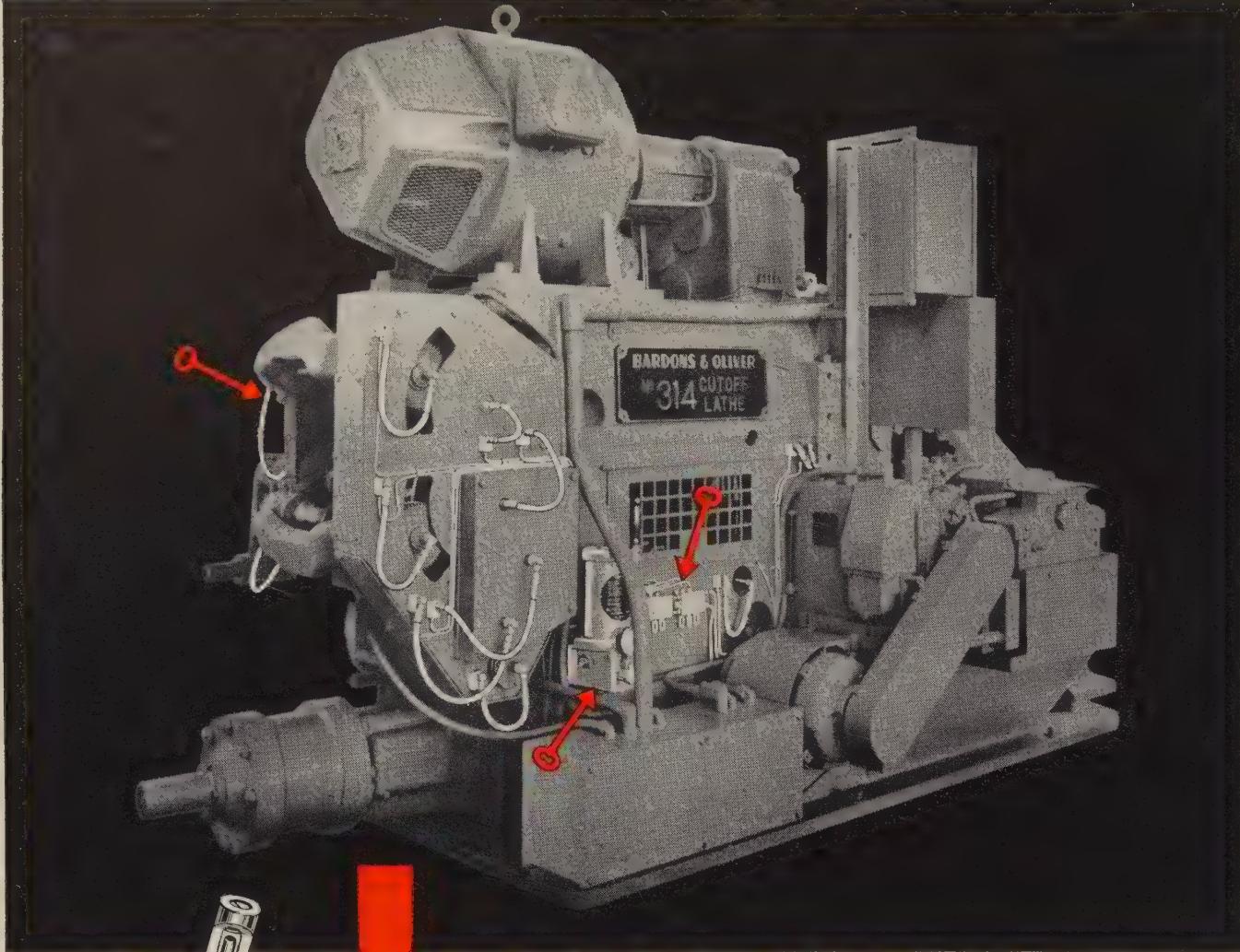
Some congressmen still want to reduce the monopoly powers of labor unions.

And the public will be listening to what you say and watching what you do in the next eight weeks. (Don't overlook the possibility of a buyers' strike that could hurt the sales of consumer products made of steel.)

The situation calls for statesmanship on the part of the steel industry and especially you, Mr. McDonald.

So what now, Mr. McDonald?

*Irwin H. Such*  
EDITOR-IN-CHIEF



## Farval lubrication keeps productivity high on cutting-off lathes

Cropping and chamfering steel tubing and pipe—as well as cutting-off and chamfering couplings ranging in diameter from 5 to 14½ inches—requires a heavy, rugged cut-off lathe like this Bardons & Oliver No. 314. It must be dependable in service—give high productivity—provide long trouble-free service life.

Bardons & Oliver design engineers chose a manually-operated Farval Dualine Centralized Lubrication System to serve the lathe's 39 vital bearings. During the last 7 years Farval has lubricated many of these B&O's—and there hasn't been a single known bearing failure to date!

Remember, a modern Farval system can adequately lubricate hundreds of bearings from one centrally-located pumping station. Why not check with your local Farval representative and see how these versatile lubrication systems can help produce superior, more productive industrial equipment. Or ask for your free copy of Bulletin 26-S—it contains the complete "Farval Story". The Farval Corporation, 3270 East 80th Street, Cleveland 4, Ohio.

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The Case of the

# VANISHING JOBS!

Imports are on the increase. Exports are on the decline. Result: Many Americans are losing jobs each year. STEEL reports on situation in three industries

SAT in my cubbyhole office and read a pamphlet on family characteristics of working wives as compiled by the Census Bureau.

Repose and calm usually come to me after reading Census literature; its figures are so neat, so logical, so precise. Besides, they might provide a clue some day—for I am an industrial detective specializing in the recovery of missing persons.

But even the Census data failed to hold my attention that afternoon. I hadn't had a case in three weeks and not a worthwhile fee in more than a month. My last job had been to trace the whereabouts of a job-hopping engineer. I never found him, but I never got paid either.

I was just about to notify my phone answering service (only the Jerry Masons can afford secretaries like Della Street) that I was going home when the instrument rang.

"Is this the Chance Detective Agency?" The voice at the other end of the line was muffled, as though filtering through a handkerchief.

"Yes, Acton Chance speaking."

"I have a job for you, Chance, and the retainer will pay your office rent for the next 14.6 months."

I liked the sound of 14.6, so I asked for details. They came quickly and precisely, although muffled. My prospective client represented the steel, auto, and machine tool industries. For several years, but particularly since 1954, jobs had been vanishing. Where had they gone? Why? How many?

"Aren't some of them going because of job mechanization?" I asked.

"We know all about those. The disappearing jobs I'm talking about we can't account for. We want you to."

And so began the biggest case I've ever worked on. For three weeks I traced statistics from here to Washington to New York, to Philadelphia, to Houston and Galveston, to San Francisco, to the Great Lakes ports. For many days I interviewed Customs officials; for many nights I stood in the shadows of the warehouses at our great docks—watching, waiting.

Finally, I had my facts, and this is the report I wrote:

America has been an exporter and importer since colonial days. The character of that trade has changed many times over the last two centuries, but never has a shift come as rapidly as that since the end of World War II.

Europe and Japan, with American help, got on their industrial feet quickly. After satisfying much of their domestic demand, they be-

## Clue 1

# Wage Scales

(Hourly Steel Rate, 1957)

U. S.	████████████████████████████████	\$2.917
Britain	████████ . . . . .	0.827
W. Germany	███████ . . . . .	0.694
France	█████ . . . . .	0.583
Italy	████ . . . . .	0.550
Japan	███ . . . . .	0.361

# Can't Compete



gan turning to foreign markets, including the U. S. The result has been a rise in our imports of many manufactured goods and a drop in exports of those products that we also make.

As foreign quality and service rapidly improved, the key competitive point became price. Wage rates in the U. S. are two to eight times what they are overseas (see Clue 1, above). Even when Europeans and Japanese pay more for their materials and transportation than we do, they can undersell us with ease because of the wage gap.

German barbed wire makers sell their products in Pittsburgh at about \$40 a ton less than those made in Donora, Pa. The Japanese, using premium priced American scrap, can undersell American producers of reinforcing bars by as much as \$29 a ton. Practically every reinforcing bar used in Florida is imported.

Compare these foreign auto prices (at New York) with those of American made cars: Simca Aronde (France) \$1575; Fiat 600 (Italy) \$1298; Renault Dauphine (France) \$1645; Volkswagen (West Germany) \$1545. As recently as 1951,

## Clue 2

## STEEL INDUSTRY:

1.6

## million tons LOST

1958 vs. 1954

IMPORTS UP . . . . . 1.3  
EXPORTS DOWN . . . . . 0.3

	IMPORTS	EXPORTS
1958 (million tons) . . .	2.1	2.4
1954 . . . . .	0.8	2.7

**14,400** Fewer Jobs

annual imports (cars and trucks) amounted to less than 25,000. The figure will hit at least 500,000 in 1961.

When the Air Force asked for bids on thirty-one 24 in. shapers, the lowest quote by a U. S. builder was \$269,490. A foreign firm asked 112,000. Many American companies now have foreign plants. One can build its tools to U. S. specifications at its subsidiary in England, then bring them back to the U. S. for 30 per cent less than the machine made here—even after transport and tariff costs. Machine tool imports are ten times higher than they were in 1950.

Our exports of steel, autos, and machine tools are also slipping because of tougher competition from the lower priced European and Japanese products in our traditional export markets.

It's an old story to this nation's builders of ocean-going ships. If it weren't for federal subsidies, they couldn't compete against British, European, and Japanese pay scales.

U. S. watchmakers have seen how the same wage situation can cause the slow erosion of an industry. So have manufacturers of

bicycles, sewing machines, electrical generating equipment, and other products.

Take a look at the purchases of heavy power transformers by the federal government, a big buyer of such apparatus: Twenty-seven per cent came from overseas in 1952, 50 per cent in 1953, 40 per cent in 1954, 60 per cent in 1955, and 80 per cent in 1956. The eight major domestic manufacturers of the equipment believe the trend "rep-

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resents a serious threat to the security of this nation" because more and more of our vital power (which could be knocked out in time of war) is becoming dependent upon foreign servicing.

The export-import situation cuts down American business volume, too, meaning the government loses corporate and personal income tax revenues.

But the most important loss is in jobs. You can only get approximations here. Yet Clues 2, 3, 4 (see exhibits) give you an idea of how

## AUTO INDUSTRY:

**520,310** units LOST

1958 vs. 1954

IMPORTS UP . . . . .	423,196	
EXPORTS DOWN . . . . .	97,114	
1958 . . . . .	IMPORTS	EXPORTS
1954 . . . . .	458,999	304,346
	35,803	401,460

**48,650** Fewer Jobs

many direct production jobs have been lost in the steel, auto, and machine tool industries since 1954. That's the year when the export-import trend began to pack a big wallop. Of course, the situation was shaping up even before then. One wire producer figures he has lost 25 to 30 per cent of his employment since 1950 as a direct result of imports.

The job-lost figure for steel was arrived at this way: Eighteen man-hours of direct labor go into the average ton of steel imported and exported. Over-all, between 13 and 14 manhours go into a ton of steel, but much of that tonnage is the simpler material. The big imports are reinforcing bars and wire products. The major exports are structural shapes, plates, line pipe, tin plate, and cold-rolled sheets. They all require more manhours.

Comparing 1954 and 1958 statistics, the net loss in tonnage was 1.6 million tons. (Imports were up 1.3 million; exports were down 0.3 million.) To get the job-lost figure, find the number of manhours involved in 1.6 million tons (multiply by 18) and divide by 2000 hours, the normal number in a

work year. Answer: 14,400 jobs lost.

Some industry men and statisticians use 187 as the number of manhours needed in direct labor to produce a U. S. car, including the major parts. With that figure, you arrive at the job-lost data the same way as in steel.

The statistical problem in machine tools is the most difficult of all because of the wide range of manhours needed for various tools and because the import figures are low. The value for Customs declaration put on machine tools is the value in the country of manufacture, not the price here. Also, industry observers believe many tools come into this country described as replacement parts when they are actually new machines. So the Customs figure for imports was doubled for our purposes. As a rule of thumb, assume that a production worker turns out \$10,000 worth of equipment in a year. So when the total loss in machine tools is \$31.8 million, 3180 jobs have been lost.

Since 1954, the export-import trend has had the effect of cancelling out 66,230 jobs directly in three industries alone. Consider the indirect effect. One set of figures

## MACHINE TOOLS:

**\$31.8** million LOST

1958 vs. 1954

IMPORTS UP . . . . .	\$7 million	
EXPORTS DOWN . . . . .	\$24.8 million	
1958 (millions) . . . . .	IMPORTS	EXPORTS
1954 . . . . .	\$40	\$53.7
	\$33	\$78.5

**3,180** Fewer Jobs

shows the auto industry has lost 195,000 jobs, directly and indirectly, because of the foreign trade situation.

I reread my report, folded it, and put it in an envelope to be picked up by my client's courier at midnight. Some 66,230 jobs had been lost directly, many more indirectly. They had migrated overseas. How many more would go? The wage differentials would tell that story. If the pay gap between the U. S. and the rest of the world narrowed, some would come back. If it widened, more would vanish.

I shook my head, then reached for the office bottle of bourbon in the bottom desk drawer and filled a Dixie cup to the brim.

Unsolved Case of

**66,230**  
FEWER JOBS

-----  
What's Your Solution?

# Soviet Imports Are Rising Faster Than Its Exports

(Millions of dollars\*)

## Total Imports

1957	1956	1955
\$3,937.8	\$3,613.1	\$3,060.6

## Total Exports

\$4,381.5	\$3,669.2	\$3,468.6
-----------	-----------	-----------

## Examples of Imports

Minerals	\$ 967.2	\$ 931.8	\$713.5
Ferrous Metals	163.5	145.6	71.1
Nonferrous Metals	127.7	143.1	133.1

## Examples of Exports

	1957	1956	1955
Minerals	\$1,519.7	\$1,138.4	\$904.0
Ferrous Metals	438.7	383.7	318.0
Nonferrous Metals	203.0	157.6	110.7

Source: Bureau of Mines.

\*Computed at 4 rubles per dollar.

THE SOVIET UNION'S imports are increasing at a faster rate than their exports. Imports jumped 29 per cent between 1955 and 1957. Exports were up 26 per cent. Two exceptions: Mineral and metal shipments are rising at a greater rate than total exports.

Minerals sent abroad were up 68 per cent; nonferrous exports skyrocketed 80 per cent; and ferrous shipments kept pace with the overall growth. The figures reflect the Soviet economic expansion program and drive toward mineral and metal self-sufficiency.

• **Mineral Exports Up**—The ratio of mineral exports to total exports increased from 25 per cent in 1955 to 35 per cent in 1957. The import ratio (25 per cent) didn't change.

Expanding output and possible in-

ventory reductions boosted nonferrous exports. Zinc, lead, aluminum, and tin had the biggest gain. There was little change in imports.

• **Ferrous Keeps Pace**—Ferrous metal shipments kept pace with the rise in total exports. Over half the goods in this category were structural steel shapes. Nearly a fifth was pig iron. Imports of rolled products from Free World nations offset most of the Soviet's ferrous metal exports.

Exports of ore and concentrates, primarily iron ore sent to European satellites, continued to expand, rising from \$115.8 million in 1955 to \$184.1 million in 1957. Imports increased from \$251.3 million to \$453.3 million.

The combined value of solid liquid fuel shipments in 1957 was

\$202.9 million, double the 1955 figure.

Apatite concentrates and asbestos head the nonmetal export list. Fluorspar, sulfur, and talc were principal import commodities.

## AMC Charged Up Over Electric Car

LOOK FOR American Motors Corp. to take a radically new tack in transportation. It's exploring the possibilities of an electric auto with Sonotone Corp., Elmsford, N. Y.

Aim of the joint effort: To develop an electrical powerplant which would be constantly recharged during a vehicle's operation. The source: A generator driven by a small, high performance engine.

• **Drawbacks of Electrics**—Present electric cars are best for city travel. Cross-country jaunts have to be interrupted every 100 miles to recharge the batteries. Normal recharging of common lead-acid batteries takes 8 hours.

The heart of the new project will be a sintered plate, nickel cadmium battery like those used in missiles and jet aircraft. Introduced in the U. S. by Sonotone, it is smaller and lighter than conventional batteries of comparable energy output.

• **Cost vs. Life**—While it costs substantially more to produce, it can withstand great overloads and can be recharged in a fraction of the time needed for conventional batteries, says Irving I. Schachtel, Sonotone's president. The original battery is expected to last the life of an electric auto, he adds. (The period could be lengthy. One laundry in New Jersey uses electric trucks that have been gliding around on deliveries for 49 years.)

"If this project is successful, it could open up a whole new area of automotive power," says George Romney, AMC president. Only a month ago, AMC officials denied interest in selling or marketing such a vehicle. (See STEEL, Mar. 2, pp. 74-75.) The company provided a stripped Rambler American to be used for prototype development of an electric auto by Cleveland Vehicle Co. The Cleveland firm also makes and sells a battery-

powered, Fiberglas delivery van. A three passenger electric car is being manufactured by Stinson Aircraft Tool & Engineering Co., San Diego, Calif.

• **Experimental**—Mr. Romney cautions: The new program with Sonotone, which could take several years, might not result in a vehicle which would prove feasible and economical, but: "We decided to launch this development project to see if a more efficient automobile might result."

Researchers will seek answers to questions of cost, economy of operation, performance, vehicle size, and weight. Work will be done at plants of both companies.

## Chrysler's Small Car Due in December?

CHRYSLER'S small car is ready to go and the company will decide this summer whether or not to produce it, says L. L. Colbert, Chrysler Corp.'s president. Most of the tooling has been purchased.

If approved, production will start in November. It will be introduced in December, about a month later than the rest of the corporation's 1960 line. It probably will be built in a Detroit plant initially (Dodge Main is the rumored site), but Chrysler has two other plants in mind—one of them out of state, possibly in Delaware.

• **Light Metals**—Light metals will be used extensively to cut weight, says Mr. Colbert, but he does not say whether it will have an aluminum engine. It has a wheelbase between 105 and 110 in. (reportedly 106 in.) and consequently won't compete with Chrysler's 96 in. imported Simcas. Mr. Colbert adds: "We aren't sure that these cars will be a smash hit because they cost almost as much to produce as our present low priced Plymouths. Labor costs make up 80 to 85 per cent of the cost of a car."

Chrysler will begin fabricating its own glass for windshields, back-lights, and side windows in one of its renovated Detroit stamping plants. Production will start early next year, and Mr. Colbert asserts that within three years the com-

pany expects to be making 50 per cent of its glass requirements. It plans to produce tempered and laminated sheets, and plate glass.

• **Looking Ahead**—Mr. Colbert says that if there is a steel strike, he expects it will be concluded before November. He adds that the corporation will have enough steel in inventory to finish its 1959 model run and to carry it 45 days into 1960 models. Word around Detroit is that Chrysler is leasing warehouses for stockpiling. It's also asking vendors to carry some of the load for fabrication of parts. By June 30, it's figured that Chrysler will have about a 14-week supply of steel on hand.

• **Sees Good Market**—Mr. Colbert reaffirms that 5.4 million or 5.5 million domestic passenger cars will be sold in the U. S. this year. He believes 400,000 imports also will be sold. Chrysler accounted for 10 per cent of the market in the first quarter, and still is looking at 20 per cent penetration for the year. It plans to deliver 100,000 cars a month to dealers through July.

## ASM Picks Putnam

American Society for Metals appoints managing director, a new position

ALLAN RAY PUTNAM is the new managing director of the American Society for Metals.

He will occupy the new position established by the society's board following the death last May of William H. Eisenman, a founder of the society and its national secretary and executive head for 40 years.

The new managing director is assistant executive secretary of the American Society of Tool Engineers, Detroit. He will assume his new post as soon as his commitments in Detroit are finished.

• **New Headquarters**—In midsummer, the society will move into a new headquarters 23 miles east of downtown Cleveland. The new building, which will house more than 100 staff members who serve the 106 chapters of the organiza-

tion, is distinguished by an elaborate landmark, the world's largest geodesic dome or "space lattice."

The 30,000 member society sponsors the National and Western Metal Shows and the Southwestern Metal Exposition.

• **Emphasizes Education**—The society is broadening its educational program and has plans for increasing its output of reference and technical books covering all phases of the metals industry. It also offers a home study and implant training program through its Metals Engineering Institute.

Mr. Putnam was graduated with a degree in economics from the Wharton School of Finance & Commerce of the University of Pennsylvania in 1942. After serving four years in the Army Air Force as a captain, he joined the American Electroplaters Society as business manager. In 1949, the American Society of Tool Engineers appointed him assistant executive secretary and publisher of *The Tool Engineer*.

He is president of the Council of Engineering Society Secretaries and was president of the National Association of Exhibit Managers in 1955.

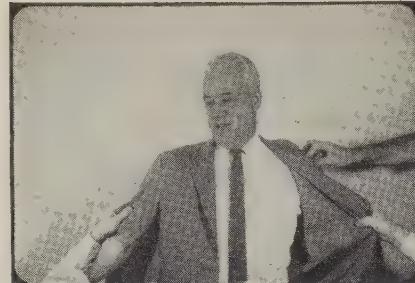
Mr. Putnam is also a member of the American Society of Association Executives, American Management Association, National Industrial Advertisers Association, American Marketing Association, American Dialect Society, and the Engineering Society of Detroit.



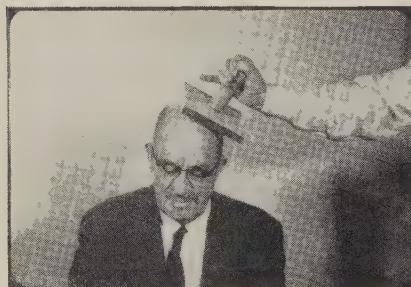
ALLAN RAY PUTNAM  
ASM's managing director

## 11 TIPS

### About the Personality Of Your Metalworking Manager



1. He's plagued with aggressive urge to advance, countered by submissive desire to stand fast



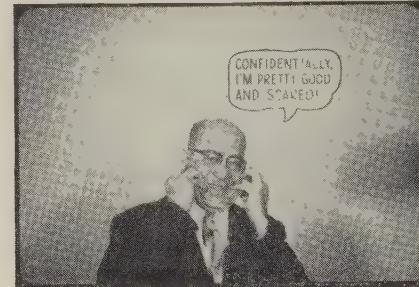
6. Likely to be a conformist, an organization man. Though he may deny it, it's usually by choice



7. He's status minded. Wants to grow, help his company grow, be a hero, advance his station in life



2. Likes to share buying responsibility; feels safer if he is a part of group buying team



8. He's security minded. Wants to play it safe, please his boss, be accepted by his associates

# How to Use Emotional Factors That Trigger Industrial Sales

HERE is a man you know well . . . Mr. Consumer Buyer. (Or is he really two men? We'll go into that later.)

He dragged out of bed this morning sporting a man-sized hang-over achieved by drinking a bourbon "worthy of his trust" . . . knowing that "relief is just a swallow away," he lights up a cigarette "designed for men that women like" and heads for the shower.

He uses a soap that "he wishes everyone else did" . . . shaves with a razor blade that makes him "look sharp, feel sharp, be sharp" . . . dons clothes that make him "look like the man he'd like to be" . . . and he's ready for a cereal that's "shot from guns" and, incidentally, for which his son received a Boom Boom Boomerang and a genuine Mau Mau shrunken head.

Across the table is his devoted wife. Last night she "dreamed she was book ends in her Maidenform bra." This morning she's more convinced than ever that "it's what's up front that counts." She gives hubby a "kissing-fresh" farewell, and he's off to the office "confident that he will be looked at and admired" in his "car with the forward look."

So far this morning Mr. Consumer Buyer has been the beneficiary, or victim, of his own, his wife's, or his child's conscious or unconscious susceptibility to advertising and selling—*consumer style*. He has permitted himself to be led, cajoled, even pushed into purchases he did or did not want, did or did not need, could or could not afford.

He has bought on impulse . . . emotionally . . . virtually involun-

tarily . . . he was spending his own money to make himself feel better, more desirable, more important, safer.

### A Different Man?

When Mr. Buyer arrives at his place of business, most industrial marketers believe a metamorphosis takes place. (This is the "second man" bit we referred to earlier.)

Mr. Consumer Buyer is now Mr. Industrial Buyer. He's no longer the pawn of advertising, no longer the fulfiller of his wife's or child's whims, no longer reckless, extravagant, emotional. Now he's spending someone else's money, so he does it cautiously, economically, intelligently, with judgment, wisdom, and reason. So it would be disastrous, following the two-man theory, to



3. The more two products are alike, the greater his emotional involvement in selecting brand or supplier



9. He watches competition. Is more likely to take buying action if his competitor already has



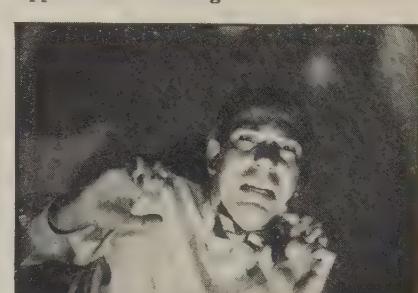
4. He won't always tell you what he really wants or how he feels. Often tells you what he thinks you want to hear



10. Is as impressed as much, sometimes more, with the reputation of the supplier as by the product



5. Feels that honesty, hard work mean security. Will often shuffle papers to appear hard working



11. Fear is the most basic emotional factor influencing the buyer's purchasing decisions

appeal to Mr. Industrial Buyer's heart instead of his head. You must sell him on his own terms, which, we are told, are 99 per cent rational.

For a long time, the editors of STEEL have suspected that the industrial buyer is *one man, a human being, all the time . . .* that he makes all his purchasing decisions (consumer and industrial) on emotional as well as rational bases.

So the editors commissioned Dr. F. Robert Shoaf, motivational research consultant and assistant professor of marketing, New York University, to find out:

1. Why the metalworking manager buys.
2. Why he selects one brand or supplier over another.
3. What type animal he is psychologically.

Here's how the research was done: Eighteen industrial cities with plants representing all of metalworking's Standard Industrial Classifications were selected. Managers in administration, production, engineering, and purchasing were chosen. Interviews covered 137 managers in 70 plants.

## ABOUT THIS STUDY . . .

Here are data covering a prime area of marketing never before fully explored . . . data that promise to open new, exciting avenues for more effective selling and advertising to metalworking.

The study was conceived by STEEL's editorial staff. Its purpose was to explore the emotional factors motivating the metalworking manager and thus establish new and improved lines of communication with him.

STEEL's study is the result of unique collaboration among specialists in four fields . . . motivation, selling, advertising, and magazine publishing. It was done under the auspices of STEEL's Marketing Workshop, established in 1957 for the purpose of developing new, practical research for use by industrial marketing men selling to metalworking.

Members of STEEL's Workshop are Walter J. Campbell, editor, STEEL, expert on communications; Dr. F. Robert Shoaf, motivation research consultant, assistant professor of marketing, New York University; Howard G. Sawyer, vice president, James Thomas Chirurg Co., expert on advertising readership and evaluation; and Dr. Hector Lazo, managing director, Marketing Counsellors, and professor of marketing at the New York University graduate school.

**Method:** To study the "why" of behavior, Dr. Shoaf had to probe for motivations. He knew that if he asked "why did you buy product A?" or "why do you prefer product B?" the interviewee would not admit that he had acted emotionally, purchased impulsively, or that his buying reflected his per-

sonal status symbols of worldly success. He would rationalize his behavior to impress the questioner.

To get beneath rationalizations, Dr. Shoaf developed a modified, open-end questioning approach for busy, executive personnel. He obtained frank and interesting testimonials about purchasing habits,

each complete with case histories to back them up. But, equally important, he also obtained information on the value judgments of this man and a fair appraisal of his personality, his goals, his joys, his fears.

### Now Hear This

Here are Dr. Shoaf's major findings:

1. The industrial buyer is more human in his buying habits than industrial marketers realize.

2. While administrative, production, engineering, and purchasing managers are different in function, they all have common management interests.

3. Needs exist everywhere in industry, but industrial marketing is not doing a sufficiently creative job of changing them to wants.

4. To the extent products and services become more alike objectively, the buyer's final decisions are based more and more on subjective emotional factors.

5. Your customers are your best prospects.

Let's take a closer look at each finding.

### Major Finding No. 1

*The industrial buyer is more human in his buying habits than industrial marketers realize.*

The composite metalworking manager has the same biological needs and psychological drives, urges, and desires as you and I. His method of adjusting, however, is peculiar to his environment—in this case his vocation.

His composite personality is quite complex. He is likely to be a conformist and organization man . . . by choice.

Upon entering the employ of a given company, he studies the ground rules. He soon learns that hard work, productivity, and conformity mean security.

When he speaks freely of his aspirations, his fears, and resistances, we find the industrial buyer is plagued with an aggressive urge to move ahead, which is countered by a submissive desire to stand fast. He is status minded, wants to grow, help his company grow, be a hero, advance his station in life. He is also security minded, wants to play it safe, impress his boss. He is com-

placent and comfortable. The victim of inertia, he often resists change.

### Major Finding No. 2

*While administrative, production, engineering, and purchasing managers differ functionally, they all have common management interests.*

1. They identify themselves with the welfare of the company, i.e., profit and loss, more efficient production, better products, personnel relations, and corporate image.

2. They closely scrutinize business competitors.

A manager of manufacturing engineering in Akron explained his management interests this way: "When I was a superintendent, I didn't care too much about the cost of a machine. If we got it, it had to pay its way. I have had an awakening since being promoted to manufacturing engineer. I look at the total cost picture now."

A recently appointed vice president of engineering at Hartford described his management interests in these words: "I am more than a vice president of engineering. My duties are becoming more involved with personnel and union problems. I'm now an adviser to the president. I'm a real troubleshooter."

"Keep your eye on the competition" is the byword. A Utica president says: "We keep up with progress by keeping our eyes on our competition. We like to know what they are up to. If they buy, we have to buy."

### Major Finding No. 3

*Needs exist everywhere in industry, but industrial marketing is not doing a sufficiently creative job in changing them to wants.*

It's fact, not fancy that most decisions of metalworking managers are based on emotion. Evidence: The conservative manager who fights change for the sake of tradition; the overcautious manager who hesitates to make decisions for fear of making a mistake and looking bad in the eyes of his boss or his associates.

To the extent that resistance to purchase is based on emotion, logical arguments and presentations

are ineffective. Such men are far more responsive to marketing strategy based on emotion.

The conservative is a follower by nature. He keeps his eye on competition and is more likely to take action if his competitor moved first. He hesitates to lead, but he will follow. You can score with this type individual by showing him when he is not keeping up with competition.

Whenever the overcautious manager involves himself in a decision, he feels he is taking a risk. He doesn't like being the guinea pig. He needs guarantees of good faith. Marketing promotion should emphasize satisfied and enthusiastic users of your products.

Even so, some of these men will always shy from decisions to purchase. In addition to assurance, they want group support. For ego bolstering, they look to other members of the group buying team. So in all major purchases, all members tend to share the buying responsibility. Each feels safer, since none wants to be in the boat alone.

### Major Finding No. 4

*To the extent products and services become more objectively alike, the buyers' final decisions are based more and more on subjective emotional factors.*

There are considerably fewer basic differences among competitive industrial products than our salesmen and advertising would have us believe. In a competitive economy, a product with built-in superiority does not stay superior for long. What then, are some of the factors which often determine the selection of one brand or supplier over another?

Good delivery is one of the most important. It was the most frequently mentioned service "must" in STEEL's study. You might well say that there is nothing psychological about late delivery. Dr. Shoaf does not agree. He says: "I submit that late delivery can cost the customer more than disruption of his production schedules. It influences the image of the supplier in the buyer's mind."

Late delivery is a broken promise. It's a lack of sincere interest. It is also injurious to the pride of the buy-



# 10 Ground Rules for Salesmen

## Who Want to Sell Better Emotionally

### 1. Keep Delivery Promises

A broken promise causes customer to lose face; reflects on his judgment. Prompt delivery makes him look good; you get reflected glory.

### 2. Don't Sell Price Alone

Customers don't like to be known as "price buyers." Give them ideas they can rationalize—quality, performance, cost reduction. Feed their egos.

### 3. Present Buyers Are Best Prospects

You've already sold him—now convince him he was right. Give him attention and service, and he'll buy even more.

### 4. You Are Your Company

The buyer sees you as a personification of your company. Reflect its corporate image in the way you dress, act, and talk. Be honest, reliable, and friendly.

### 5. Make Buyer Feel Important

Assure him that you appreciate his business. Don't take him for granted. He expects personal attention. Don't win arguments and lose sales.

### 6. Don't Overlook Little Things

Buyers are creatures of habit. Habits are made of little things. Make it easy for him to buy from you. He'll expect you to remember the big things—remember the little ones, and he'll be pleasantly surprised. So will you.

### 7. Concentrate on Thought Leaders

Some men have more influence than others. They are more progressive, ambitious, daring. Find these men. Show them how your product will make them bigger, more important.

### 8. Study Your Sales Contact

Know everything you can about him. The kind of man he is, what he does, where he's going. If your product can help him get there, show him how.

### 9. Win Consideration

Needs for your product exist everywhere. Change them to wants. Sell your product's virtues, but sell your company's reputation. Once you get your prospect to listen, be sure he is understanding.

### 10. Reassure the Buyer

Fear is his primary motivation. Fear of erring, fear of upsetting the boss, fear of looking bad to his associates. Stand behind your product; guarantee satisfaction; build company reputation for reliability; show satisfied customers.





**58% Want Prompt Delivery**

Late delivery is a broken promise, indicates lack of sincere interest . . . causes buyer embarrassment, loss of prestige



**33% Want Personal Attention**

Some like authority image of large supplier; all prefer friendly, helpful service. All expect interested attention



**28% Demand Product Service**

Installation, adjustments, debugging, technical assistance, quick service in emergencies are supplier musts

### **... Buyers Expect These Services from Suppliers**

er—to his status—reflecting upon his ability as a buyer. Some buyers become emotional to the point of vehemence. A purchasing director in New York explains: "When a vendor doesn't meet delivery dates, it shows a poor attitude. Hell, we must not be important to them . . . I like to deal with people that *act* like they really *want* our business."

Second only to delivery is the desire for *product service*. Literally dozens of testimonials reveal that surprisingly few manufacturers have the reputation for making sincere and consistent efforts at service followthrough—another sign of disinterest in the customer. Buyers shy from venders with poor service reputations. They fear that they will be left "holding the bag."

**Corporate Image:** There is no denying the importance of corporate image as a buying stimulator. People feel safer dealing with a company they know.

Some buyers desire association with the old, established, reliable; others prefer the young, dynamic, progressive. You can create the

image you want. But while the corporate image is important, *it does not mesmerize*. Even from an old, reputable company a new type of equipment must be justified. Corporate image is important to the extent that it serves as a reminder when the buyer is seeking suppliers, but it does not necessarily stimulate him to action.

**Size of Company:** Your metalworking buyer enjoys identification with the prestige-authority image of the industry giants . . . whether he is urged by his insecurities to identify with authority, or is driven by his pride to associate with prestige. The corporate image of size can represent safety or status, or both.

But large companies sometimes appear unapproachable, standoffish. Small venders seem warm and friendly by comparison . . . more apt to give personal service. In the final analysis, the buyer makes his selection of large or small on the basis of personal value judgments.

Dr. Shoaf suggests that you spend your marketing dollars to look

neither big nor small. He recommends: Look helpful and friendly.

#### **Major Finding No. 5**

*Your customers are your best prospects.*

Marketers are becoming so enraptured with the mysteries of unexplored markets and methods of exploiting them that they often overlook the obvious: The people who are buying your goods and services today. Your customers are *not* inclined to seek new suppliers as long as you are doing a good job. Even when a new type product is desired, buyers first seek out their suppliers for information on sources.

Most loyalties to suppliers thrive on delivery and service as long as product quality and price are in line. Recognize the fact that your best prospects are your present customers. With industrial expansion gaining momentum as we head into the "Soaring Sixties," their orders alone represent growth possibilities each year.

### **THREE THINGS SALESMEN DO BEST . . .**



1. Keep customers happy through attention, service, and friendship



2. Create new customers by promoting product virtues, demonstrating values



3. Create customers through specific proposal, negotiating, pressing for order



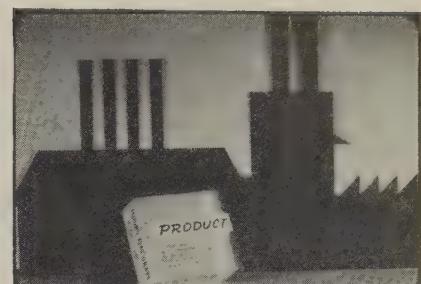
**41% Look for Satisfied Personnel**

Buyers feel they are more likely to get good products from companies that employ a "happy crew"



**39% Look for Honesty, Sincerity**

Buyers want to be treated honestly, fairly. They are most critical of pricing, product performance, overselling



**29% Stress Product Quality**

Vendors' reputation for quality products, sales service, financial solvency are all part of this picture

## **... They Prefer Suppliers with These Qualities**

### **Conclusions**

1. *Fear*, Dr. Shoaf believes, is one of the major influences in industrial buying. The buyer is afraid of displeasing his boss—and his associates. The average person won't risk substantial sums of his or his company's money on unproved products or unreliable companies.

2. *Who the manufacturer is* is as important, sometimes more important, than what the product is. The company behind the product is always part of what the customer is buying.

This second point suggests that we take another look at the fundamental relationship of selling and advertising. Too many people in industrial marketing overlook this fact:

"Salesmen should be expected to do what they can do best; and advertising should be expected to do what it can do best."

What salesmen do best: 1. Keep the customer happy through atten-

tion, service, friendship. 2. Create new customers by using his point-of-sale talents to promote the virtues of the product, make a specific proposal, counter resistances, negotiate, answer questions, press for the order.

What does advertising do best?

Sometimes, it's the best way to broadcast information—over more ground and faster than salesmen can do it.

Sometimes, it's the best way to widen the market by revealing new areas or new uses.

Sometimes, it's the best way to attract leads, or influence stockholders, or even convince present customers.

Sometimes, it's the best way to sell the company that's behind the product.

With product differences becoming less discernable (and less significant in the selection of brand or supplier), buyers must weigh other values: You'll find them in the people behind the product, but they're talked of in terms of the

company, its skills, its services, its reliability, its delivery performance.

It follows that it is desirable, often mandatory, to leave a favorable emotional impression of your company in the minds of everyone who has a say in purchasing decision.

Sales and advertising promotion to metalworking managers should provide assurances of service, good delivery, and the success of your product. Keep these men informed of competitor's activities. Show them how your product can help make them be heroes in the eyes of their bosses and associates.

One final thought:

The more competition your product has, the more your product tends to be like that of some other manufacturer . . . then the more your customers and prospects in metalworking will tend to buy the emotional "sizzle" as well as the steak.

*• An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.*

## **THREE THINGS ADVERTISING DOES BEST . . .**



1. Broadcasts information over more ground, faster than a salesman can do it



2. Widens markets, attracts leads, convinces parties with indirect sales influence



3. Builds corporate identity for company that's back of the product

## Kefauver Pushes Bill To Allow Consumer Post on Cabinet

YOU AND YOUR wife will soon be sitting in (by proxy) on the deliberations of the President's cabinet if Sen. Estes Kefauver (D., Tenn.) gets his way. The bill creating such a post is sponsored by the coonskin campaigner and 13 other Democratic senators. It can be expected to receive considerable support in the House. In essence, it is what consumer pressure groups have wanted for years. The depression of the thirties spawned organizations and similar legislation to protect the consumer.

As a metalworking manager, you may well have second thoughts about Senator Kefauver's idea. The new department he proposes is designed "to protect and promote the interests of the people of the U. S. as consumers of goods and services," will present "the viewpoint" of the consumer when government policies are formed; represent "the economic interests" of consumers before the court; and disseminate "information helpful" to consumers.

The bill's language is of the broadest sort. It practically bestows the right to interfere in every conceivable function of government. Can you think of anything that doesn't in one way or another concern the consumer? For example, the new department's jurisdiction would extend to the Food & Drug Administration, the Labor Department's price and cost of living divisions, some branches of the Agriculture Department, and some testing functions of the National Bureau of Standards. It could easily become Washington's biggest empire by moving in on the Federal Trade Commission, the Commerce Department, and even the Office of Civil & Defense Mobilization.

## More Surveys: More Interference

Studies, surveys, and investigations would be the tools of the department for controlling the relations of business with the consumer. It would have the power to investigate capacity of consumer goods industries, distribution systems, price levels (and their "reasonableness"), and the quality of goods. By legal legerdemain, the restrictions that normally apply to the production of drugs and medicines would be carried over to your wife's new automatic toaster.

Firms with assets of \$5 million or more would get



special attention from the senator's proposed department: They would be required to exhibit production and distribution costs (although the bill adds that such information would be made public "only in a form" which would disguise the particular company studied).

One prominent business analyst has termed the bill a "Frankenstein." We must recognize that the senator wouldn't agree. He undoubtedly thinks it will benefit the economy and the consumer.

## Controls Trend Picks Up Steam

Business can take Senator Kefauver's ideas and those of the Clark-Reuss Bill on price increase notification as strong indications of the power of the liberals in Congress. None of these bills may pass this session or next, but more like them are bound to be popped into the legislative hopper in the early sixties. Without knowing it, proponents of the measures probably deny the basic tenet of capitalism: The bills seem to take free choice out of our economic structure. The Clark-Reuss Bill, for example, would require the President to establish "targets" for employment, production, and purchasing power. This, notes the U. S. Chamber of Commerce, would establish arbitrary patterns into which the government would be required to force the economy.

## Fallon Plans for 1962's Roads

Rep. George Fallon (D., Md.) chairman, House Roads Subcommittee, is working fast to keep the federal highway program on schedule. His bill would apportion 1962's federal highway funds on the basis of the 1958 cost estimate (which was also used for 1960 and 1961 apportionments). It would allow for an increase of \$300 million in federal funds for the 1962 program. The action would bring 1962's fund up to the levels Congress wants spent in each of the two previous years, 1960 and 1961.

Representative Fallon reports the apportionment must be established now to give state highway departments planning flexibility. Leadtime on a road runs over two years from the engineering stage. The shortage of cash in the Highway Trust Fund will have to be met by a special revenue bill. Highway interests think passage of the Fallon measure on apportionments will lead to a revenue bill this session.

## Push for Limited War Capability

Testimony given to the House Defense Appropriations Subcommittee reveals dissatisfaction by the Army and Navy over our huge stockpiles of hydrogen weapons. We could destroy an enemy several times (if that were possible) with what we already have in stock, and the stocks are still being built. It's said that the subcommittee was much impressed with the arguments of the two services for increasing our limited war capability and allowing a dropoff in large expenditures for bomb stockpiles.



Precision production of these valve assembly flush rods, at Connecticut Manufacturing Company, rolls in high gear with Gulfcut 45B as the coolant-lubricant. Piece is machined from  $\frac{1}{4}$ -inch stock of tough monel metal.



Mr. Emil Johnson, left, winner of Gold Micrometer award, shows finished pieces to Peter Eaton, Gulf Sales Engineer. Mr. Johnson uses Gulfcut 45B for all the tough machining jobs at Connecticut Manufacturing Company.

best cutting oil for the tough jobs"...

## RUN BETTER!

raft and strain-tempered monel metal. Monel is rougher to cut than most metals. But with a workhorse cutting oil like Gulfcut 45B, we can hold to extremely close tolerances, provide good finish, and do it at higher speeds with less friction. We use Gulfcut 45B on all our tough jobs."

See how Gulf makes things run better. Whatever type of machining you do, there's a shop-tested Gulfcut cutting oil to meet your needs. Call a Gulf Sales Engineer at your nearest Gulf office, or mail the coupon.

**GULF OIL CORPORATION**  
Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.

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Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



SM-0105

# Rolling Mill in Trouble Revitalizes Eight Ways

- It implemented results of consultant's study.
- Strengthened its sales department.
- Organized a market research section.
- Rebuilt its distributor organization.
- Established closer cost and quality controls.
- Concentrated on nonferrous mainstays.
- Diversified its product lines.
- Bought capital equipment worth nearly \$1 million.

SEYMORE Mfg. Co., Seymour, Conn., has worked itself out of a profitless crisis in 2½ years.

The situation: Seymour's rolling mill was swamped during floods along the Naugatuck River in 1955. Many customers were lost and not all were rewon after the mill resumed operations. Stainless steel had carved inroads in the company's mainstay—the nickel silver market.

• **The Beginning**—The company started its comeback when George T. Hubbell was elected president in October, 1957. His long experience with the 80 year old company enabled him to draw up a program that ended losses and rebuild Seymour to a strong position in the brass, nickel silver, and phosphor bronze markets. The first step: A consultant's study of management, sales, and production techniques.

• **Internal Changes**—The sales department was bolstered in February of last year with planning, better direction, forecasts, budgets, and quotas . . . In May, 1958, a marketing research section was organized. The program: Evaluation of salaries, bonuses, and quotas in sales; institution of a quarterly sales forecasting system; placement of additional salesmen to increase shares

of the markets; and changing territories to improve contacts . . . A detailed study of competitive and company distributors was undertaken to stimulate service sales. Also studied: Distributor replacement; additions of others in new markets; and more sales and merchandising help to distributors.

- **Marketing Efforts**—Immediate

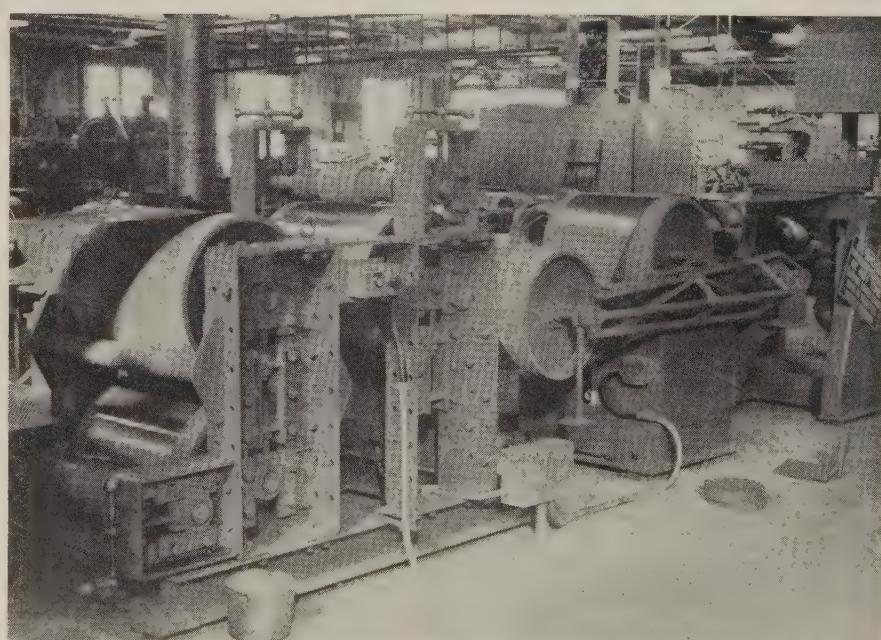
attention was given to re-establish Seymour in a sound position in nickel silver and phosphor bronze markets. The tools: Extensive contact with customers (concentrating on those industries which were weak) and focusing on sales where market penetration was shallow.

Seymour had built an enviable reputation as a quality mill. To improve its product, a major quality control program was launched. New equipment was added to the laboratory, including a \$40,000 Jerrell-Hashe direct reader.

• **Move to Diversify**—It was then learned that ultimate markets were limited for nickel silver and phosphor bronze and that other products offered only a modest rate of growth. The decision: Diversify.

Initially, Seymour expanded its product lines to get larger shares of cupro-nickel and 444 bronze markets. Demands for specialty tolerance metals in electrical equipment and other industries prompted it to obtain a United, 4 high, special package mill that would produce material down to 0.001 gage in widths up to 7 in.

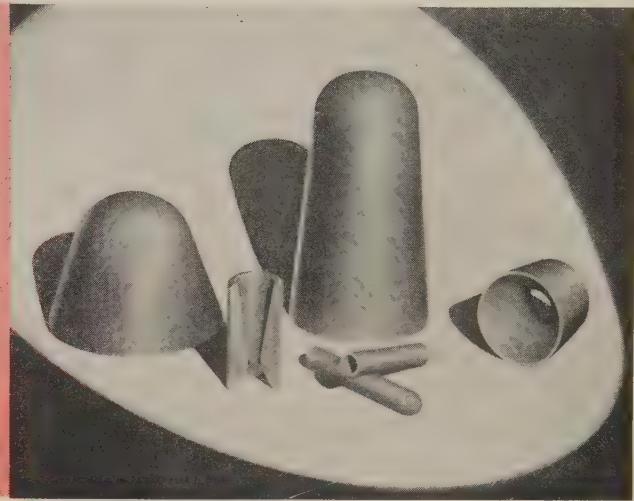
In February this year, the firm began cold rolling stainless steel alloys in thin, close tolerance strip. A new annealing furnace (cost \$200,000) was installed. In all, it has spent nearly \$1 million on new equipment.



This strip tension roll facility was part of Seymour's \$1 million expansion

# Look Where Silicon Carbide Is Going

**The well established abrasive is getting attention in structural and other uses. One version (particles of graphite are embedded in a matrix of silicon carbide) illustrates its new found versatility. The material, called GRB, can be fabricated into practically any shape (see photo).**



WHEN the late Edward G. Acheson first made silicon carbide in an electric furnace fashioned from a plumber's bowl, he probably didn't realize that one day the material would be used in probing outer space. But recent tests show that a form of silicon carbide may fill the requirements of parts for nose cones and rocket nozzles.

• **It May Help You**—That's only one of many areas in which the 70-year-old material (called SiC) shows promise of gaining new significance. Long used as an abrasive, it's now being investigated as a structural material in a variety of high (and low) temperature applications.

• **It Works Here**—Carborundum Co., Niagara Falls, N. Y., has developed several new forms that promise to widen the material's scope. One is called GRB silicon carbide.

Particles of graphite are embedded in a matrix of SiC. The dense, self-bonded matrix shields the graphite to prevent rapid oxidation and erosion. The graphite particles absorb high thermal shock, preventing stress failure. Net result: A rugged new material that combines strength and high thermal shock resistance with the ability to withstand oxidation and erosion at high temperatures and speeds.

• **And Here**—The electronics in-

dustry is a growing market for SiC. High temperature, high energy resistors are being made from recrystallized SiC. (Large SiC crystals are bonded by bridges of SiC, forming a continuous, homogeneous structure.)

High temperature thermistors may offer the greatest potential for the recrystallized product. Carborundum suggests its use in: 1. Domestic and industrial ovens. 2. Portable temperature indicating instruments. 3. Jet engine temperature indicating instruments. 4. Soldering irons. 5. Domestic irons. 6. Clothes dryers. 7. Induction heating devices. 8. Industrial fire detection systems.

• **Here, Too**—Colorless, high purity SiC is showing promise as a transistor material for missiles and high speed aircraft. It's available in laboratory quantities at about \$200 a pound.

Westinghouse Electric Corp. has developed silicon carbide rectifiers that can operate above 930° F.

• **New Variety**—KT silicon carbide, a new Carborundum impermeable ceramic, is finding many jobs in metalworking. Examples: Heat exchanger parts, combustion tubes, ball mill liners, pipe and fittings, valves for corrosive liquids and high temperature gases, dies for powdered metallurgy, wear resistant parts (orifices, liners, sleeves), nu-

clear reactor structural parts, rocket nozzles.

• **Electrical Uses**—Reports Carborundum: "On the horizon are appearing important new electrical uses: Rectifiers able to operate at red heat and perhaps even high temperature transistors. Thermocouples, stable to 3990° F, have been produced."

The Air Force's Cambridge Research Center will hold a conference this month to investigate silicon carbide's electrical potential from a defense standpoint.

• **Heat Resistance**—SiC stands high on any list of superrefractory materials. Even the 5000° F inferno in the combustion chamber of a rocket is harnessed by thrust nozzles of SiC. Reasons: High heat conductivity, plus low thermal expansion.

• **Jewelry**—Carborundum is attempting to grow large crystals of high purity SiC. If it succeeds, watch for the material to appear in jewelry as well as new electrical applications.

• **Metallurgical Uses**—Gray iron foundries add SiC briquets to get better machinability and sounder castings.

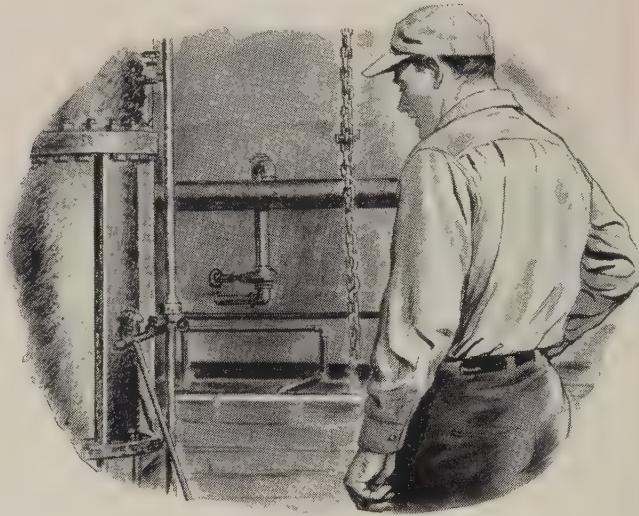
Steel and ferroalloy producers use the material as a reducing agent and deoxidizer.

# new, cost-reducing chemical for ACID PICKLING BATHS

**AMCHEM SERSEAL\*** reduces heating requirements up to 70%,  
improves working conditions!



BEFORE SERSEAL, steam vapors and fumes escape from the bath, making working conditions unpleasant, lowering morale.



SERSEAL HAS BLANKETED THE BATH in just 10 seconds. All steam, corrosive fumes and vapors are contained within bath.

Put these 7 important Serseal advantages to work for you!...



- 1 Save up to 70% in heating costs.
- 2 Improve working conditions both from a comfort and health standpoint. Steam, heat, fumes and vapors are contained within the bath.
- 3 Cut warmup time. The blanket prevents heat loss.
- 4 Less corrosion of surrounding equipment. Corrosive fumes are retained in the bath.
- 5 Reduce the cost for heating elements.
- 6 Less exhaust equipment required. Since the bath is sealed, there is little escape of fumes and vapors. And in many cases, ventilating systems can be safely eliminated.
- 7 Now proving its economy, efficiency and overall satisfaction in many customer plants.

Write today for complete information about this important new cost-reducing, work-saving chemical blanket for acid pickling baths! Address Ambler 50, Pa.



\*Patent applied for

# SERSEAL

Amchem Serseal is another chemical development of **Amchem Products, Inc.** (Formerly American Chemical Paint Co.) AMBLER 27, PA. • Detroit, Mich. • St. Joseph, Mo. • Niles, Calif. • Windsor, Ont. • Amchem is a registered trademark of Amchem Products, Inc.

# Will Auto Buying Patterns Change?

Detroit wonders if three year cycle for big cars or five year one for imported makes will be followed after it gets its own light models on the market

TYPICAL of the buyer of a U. S. built car is the fellow who trades in his three year old clunker for a spanking new hardtop and signs up for another 36 months of payments. He berates the companies for pricing cars over his head, and curses the high cost of maintenance and repair. But every three years—or oftener—he's back in the market.

R. L. Polk Co. figures show that roughly 35 per cent of big car trade-ins are three years old. Only 13 per cent are four years or older.

The typical buyer of an imported car stands out in sharp contrast. The National Automobile Dealers Association, which has been surveying this bird ever since it was discovered the market for U. S. cars has been dropping, finds that 34 per cent of trade-ins for foreign makes are five years old. The other 66 per cent is divided almost equally among autos one to four years old.

• **Question**—Now Detroit is wondering which pattern buyers will follow when they have a chance to acquire the U. S. built light cars the Big Three are readying. A popular theory is that if buyers keep compact cars five years, it will depress the normal rate of market expansion. There's a complicated formula that goes with this, but the conclusion is that the longer lived economy cars could stall 250,000 potential new car buyers each year.

The table (right) shows some of the NADA's latest findings. Presumably, these statistics also apply to Rambler and Studebaker Lark buyers. "Most of the sales are for cars costing less than \$1900," points out Paul Herzog, NADA's research director. His surveys show that

60 per cent of the buyers of foreign makes traded in low priced American cars. Some 25 per cent traded one import for another. Over half the sales were for one-car family use.

Backing up George Romney's pitch that the car is no longer a prestige symbol, Mr. Herzog reports that 95 per cent of the foreign car owners cite price and economy of operation as their prime reasons for buying.

This array of facts and figures only substantiates what Detroit has suspected for over a year. The talk it has generated is the kind that's always cropping up when Detroit faces a change. In private conversations, several industry officials have admitted that while they aren't sure

what will happen to the forthcoming light cars, they believe that no matter what reasons are given, purchasers will continue to buy the smaller cars pretty much the same way they've been buying bigger ones.

• **Answers** — Says one executive: "It's most unlikely that the majority of these economy car buyers will keep their products five years instead of three. Remember that the five year old cars these import buyers have traded in are mostly American automobiles. All this seems to prove is that these people would keep any car five years."

If the compact car market doesn't rise above 1 million units a year, the industry isn't going to worry too much about how long these cars are kept. But Detroit no longer is quite so complacent about Mr. Romney's prediction that compact cars will account for 50 per cent of annual sales. If the mar-

## Price Preferences of Foreign Car Buyers

Their occupations	Under \$1500	\$1500-1899	\$1900-2499	Over \$2500
<b>Professional</b>	35%	38%	34%	39%
<b>Executive</b>	18	20	22	31
<b>Skilled</b>	15	15	15	10
<b>Sales</b>	10	11	12	10
<b>Clerical</b>	8	8	9	4
<b>Students, housewives, etc.</b>	14	8	8	6

Source: National Automobile Dealers Association survey.

ket does continue to grow you can bet that these smaller cars will undergo enough changes every three years or so to prod buyers into making a switch.

In fact, there's a fair sized segment of autodom that believes that as the compact car market begins to expand so will the compact cars. In another five or six years, it's likely that a car starting out with a 106 in. wheelbase will be stretched to 112 in. By 1975, we'll be ready to go through the whole "small car" cycle again.

Meanwhile, the biggest persuader for keeping buying patterns the same is dealer financing practices. As one GM marketeer puts it: "I don't know why, but it seems like the greatest compulsion for buying a new car is to pay the 36th installment on the old one. After three months of freedom from monthly payments, it seems like the average guy just can't wait to jump back into hock. I don't think it makes much difference what kind of car he drives." The industry obviously isn't going to do much to disturb this tendency.

## Hawaiian Market Hailed

Chrysler Corp. has taken time from searching out foreign markets to laud our newest state, Hawaii, as a fast growing automobile market. Nicholas Kelley Jr., Chrysler vice president and manager of the Overseas Div., says Hawaii has 170,000 passenger cars in operation. This number has almost doubled in the last ten years while the number of cars on the mainland has increased only by two thirds, he adds.

Hawaii ranks 45th among the states in passenger car registrations. Delaware, Wyoming, Vermont, and Nevada have fewer cars. Alaska's total isn't known, but it's believed to be much lower if military vehicles are excluded. The District of Columbia has 175,338 cars registered.

Travel in Hawaii is somewhat restricted since the largest island is less than 100 mi. wide. As a result, Mr. Kelley points out that over a third of 12,000 new cars registered in the islands last year are small imports from Europe and Japan. He believes this will be a golden market for Simca whose Hawaiian

sales doubled between 1957 and 1958.

## Chevy Move May Be Tipoff

Chevrolet Div. is adding 79,000 sq ft to the truck assembly area of its 1 million sq ft divisional assembly plant at Flint, Mich. Division officials had "no comment" when asked whether Chevrolet would discontinue building trucks at its Willow Run, Mich., plant.

Thomas M. Schooley, Flint plant manager, says the continuing trend toward custom assembly has made it necessary to provide more storage space for parts and subassemblies as well as more elbowroom for putting trucks together. Autodom believes Willow Run truck production will be moved to Flint because the Willow Run facilities are the buildup site for Chevrolet's light car.

The expansion and modernization program in Flint calls for new paint spray booths and drying ovens as well as rearrangement of spring, axle, and chassis lines. The additions will be completed by mid-July and equipment installations will be finished by September. Chevrolet hasn't released cost figures, but the job is estimated to run about \$948,000.

## Exhaust Notes

- We don't believe it, but Detroit's rumor circuit has it that Chevrolet's light car will be named *Invader* and Chrysler's entry is called *Falcon*.
- Most conservative estimates now peg total 1959 small car sales at 850,000; possibly 950,000. This includes the imports plus Ramblers and Larks.

- Ford sales continue to climb. Early March sales are running 10 per cent above February's and 18 per cent above January's. For the first ten days of March, sales were 58 per cent above last year's. Chevrolet Div. no longer is releasing ten-day figures. This usually indicates a sales decline.

- Roy Abernethy, AMC's marketing vice president, reports that 127,216 Ramblers have been sold so far in the fiscal year, compared with 51,829 cars for the same period last year. AMC also announces that new steering linkage ball joints with nylon bushings which are permanently lubricated and sealed for life, will be installed on Rambler Rebel V-8 models as a running change this spring. They'll be standard on all 1960 Ramblers.

- Chrysler's De Soto Div. is investing nearly \$25 million in engineering and styling models through 1963. J. B. Wagstaff, De Soto's general manager, says styling and engineering commitments have been made on 1960 and '61 models. Development work is underway on the '62s, and the 1963 cars are on the drawing boards.

- More than 20 makes of British cars will be displayed at New York's International Auto Show, Apr. 4-12. Included are a new V-8 sports car designed for the American market, a new economy car that can be assembled from a "do-it-yourself" kit, and a four seater sports coupe claimed to be the world's fastest production car.

Holland's new DAF car, priced under \$1500, will also be featured. Powered by a 2 cylinder engine, the car delivers more than 40 mpg. Top speed is about 60 mph. An automatic transmission is optional.

- A unitized glass fiber hood, fender, and radiator shell assembly gives conventional heavy duty trucks tilt cab-over-engine accessibility. Known as Uniglas, it is made by Kenworth Motor Truck Co., Seattle.

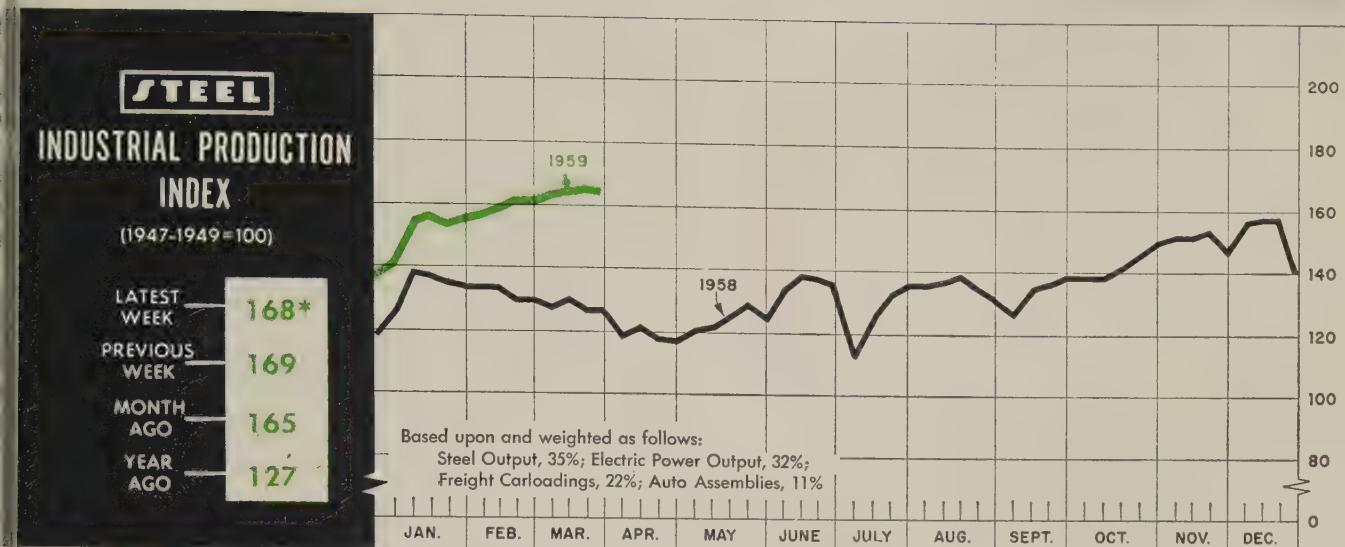
## U. S. Auto Output

Passenger Only

	1959	1958
January .....	545,757	489,515
February .....	478,484	392,112
2 Mo. Totals	1,024,241	881,627
March .....	357,049	
April .....	316,503	
May .....	349,474	
June .....	337,355	
July .....	321,053	
August .....	180,324	
September .....	130,426	
October .....	261,696	
November .....	514,099	
December .....	593,920	
Total .....	4,243,526	
Week Ended	1959	1958
Feb. 28 .....	127,783	91,508
Mar. 7 .....	133,540	83,892
Mar. 14 .....	134,283	86,447
Mar. 21 .....	135,466	80,560
Mar. 28 .....	119,881†	93,844
Apr. 4 .....	125,000*	64,318

Source: *Ward's Automotive Reports*.

†Preliminary. \*Estimated by STEEL.



\*Week ended Mar. 8.

## Leading Indicators Show Stability

THE ZIP that characterized the early stages of the recovery has about played out. Six of the eight so called "leading" business indicators set forth by the National Bureau of Economic Research indicate that the economy is in the process of leveling out.

The eight barometers historically show the movement of the general economy anywhere from 2.5 to 10.5 months ahead. All but industrial construction have been in an upward movement long enough to indicate that the peak in the present business uptrend probably has been reached and that a plateau at a near record height will prevail at least until the steel labor settlement is reached. None of the indicators foreshadows even a slight down-trend in the foreseeable future.

• **Business Failures** — (Leadtime: 10.5 months.) The number of business failures has been declining steadily since last April. So far this year, the weekly average is 289, compared with 317 for the corresponding 1958 period, says Dun & Bradstreet Inc. Liabilities do not give as clear a picture of betterment, but February's total was a decided improvement over the January figure. Casualties have been heavier than usual in the last few months in the larger corporations. Generally speaking, however, liabilities

have been decreasing since May, 1958.

• **Business Incorporations** — (Leadtime: 2.5 months.) Since last March, D&B's figures show incorporations have been increasing steadily, with the biggest hikes coming since November. Though down

numerically in short February, the 15,758 new charters set a record for that month. Combined with January's 18,765, the two month total climbed 46.6 per cent above the corresponding 1958 total and 42.8 per cent ahead of 1957's.

• **Stock Average** — (Leadtime: six

### BAROMETERS OF BUSINESS

#### INDUSTRY

INDUSTRY	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
Steel Ingot Production (1,000 net tons) <sup>2</sup> .....	2,653 <sup>1</sup>	2,631	1,312
Electric Power Distributed (million kw-hr) .....	12,850 <sup>1</sup>	12,900	11,645
Bituminous Coal Output (1,000 tons) .....	7,700 <sup>1</sup>	7,625	7,596
Crude Oil Production (daily avg—1,000 bbl) .....	7,150 <sup>1</sup>	7,203	6,264
Construction Volume (ENR—millions) .....	\$355.4	\$393.7	\$441.2
Auto, Truck Output, U. S., Canada (Ward's) ..	152,991 <sup>1</sup>	171,093	120,468

#### TRADE

TRADE	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
Freight Carloadings (1,000 Cars) .....	610 <sup>1</sup>	603	532
Business Failures (Dun & Bradstreet) .....	292	311	357
Currency in Circulation (millions) <sup>3</sup> .....	\$31,231	\$31,287	\$30,524
Dept. Store Sales (changes from year ago) <sup>3</sup> .....	+17%	+9%	-4%

#### FINANCE

FINANCE	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
Bank Clearings (Dun & Bradstreet, millions) ..	\$24,903	\$26,589	\$22,359
Federal Gross Debt (billions) .....	\$284.2	\$284.5	\$273.0
Bond Volume, NYSE (millions) .....	\$22.8	\$36.6	\$21.6
Stocks Sales, NYSE (thousands of shares) .....	12,877	21,613	10,856
Loans and Investments (billions) <sup>4</sup> .....	\$94.7	\$94.3	\$90.5
U. S. Govt. Obligations Held (billions) .....	\$30.3	\$30.6	\$28.3

#### PRICES

PRICES	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
STEEL's Finished Steel Price Index <sup>5</sup> .....	247.82	247.82	239.15
STEEL's Nonferrous Metal Price Index <sup>6</sup> .....	220.8	220.9	199.1
All Commodities <sup>7</sup> .....	119.3	119.4	119.8
Commodities Other than Farm & Foods <sup>7</sup> .....	127.8	127.8	125.9

\*Dates on request. <sup>1</sup>Preliminary. <sup>2</sup>Weekly capacities, net tons: 1959, 2,831,486; 1958, 2,699,173. <sup>3</sup>Federal Reserve Board. <sup>4</sup>Member banks, Federal Reserve System. <sup>5</sup>1935-39=100. <sup>6</sup>1936-39=100. <sup>7</sup>Bureau of Labor Statistics Index, 1947-49=100.

## PLANT AIR

## Moisture Chief Cause of Trouble...

Every company today is looking for ways to offset the increased costs of labor, material, equipment and services. At a gasoline station you expect "Free Air", but in industry it is a major expense. Perhaps in your own plant, for an investment in a few minor compressed air system alterations, significant savings are possible.

Water, sludge, rust, oil and dirt in compressed air systems are prime causes of maintenance and production down-time. Water vapor condensing in air lines tends to corrode the piping. Also, water present in the piping may freeze during winter, causing serious reduction of compressed air supply. Such restrictions are often difficult to locate and thaw. This same line moisture may emulsify lube oil destroying its lubricating value and the resultant mixture has high fouling characteristics. Frequently, ice will form within the tool itself since expanding air cools the moisture... tool efficiency will be seriously affected.

## Some of the Other Problems Created By Wet Compressed Air...

Wet compressed air is not only a construction and production tool problem. Faulty paint jobs, contaminated chemical and food products can often be traced to moisture laden compressed air. Water-hammer, unequal pipeline thermal expansion and line leaks also result from collected moisture. In addition, air lost through traps, and in blow-down of compressed air lines provide no useful work... represent a sizeable power loss.

## You Can Lick Compressed Air Moisture Problem...

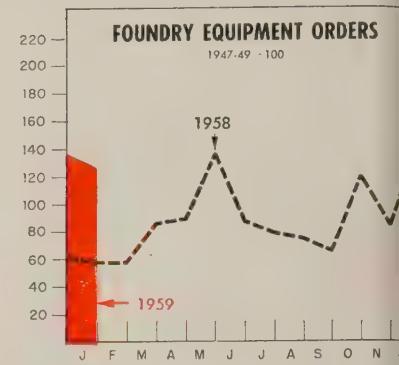
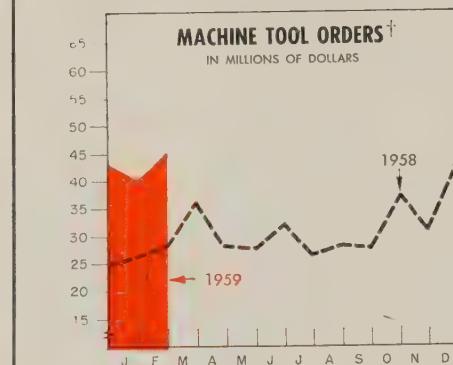
All of these hidden costs can be virtually eliminated by the installation of an Adams Aftercooler and Cyclone Separator between the compressor and receiver tank. By cooling discharge air to within 10° F. of cooling water temperature — guaranteed with Adams standard Aftercoolers — the moisture can be removed at the separator. Pressure loss is less than one-half pound on these units including the separator. In severe cases, moisture removal of over 90 per cent can be obtained by cooling the air with Adams 2° Aftercooler to within 2° F. of water temperature.

## Air Filter for Final Protection at Point of Use...

As an added safeguard for expensive tools and equipment, an Adams Poro-Stone Air Filter should be installed just before the air is used. These filters remove all solid material picked up by the air stream. With an Adams Aftercooler, Cyclone Separator and Air Filters clean, dry, trouble-free air is supplied to your production tools. You get continuous service with minimum maintenance.

For further information on how the complete line of Adams air equipment can solve your compressed air problems, write today for your free copy of Bulletin No. 712 on Aftercoolers and Bulletin No. 117 on Poro-Stone Air Filters from the R. P. Adams Company, Inc., 222 East Park Drive, Buffalo 17, New York.

## THE BUSINESS TREND



	New Orders	Shipments		
	1959	1958	1959	1958
Jan.	41,050	26,850	31,300	57,800
Feb.	45,500*	28,300	36,100*	48,050
Mar.	36,150	.....	54,150	.....
Apr.	28,300	.....	50,900	.....
May	28,050	.....	50,100	.....
June	32,100	.....	45,500	.....
July	26,550	.....	29,700	.....
Aug.	28,300	.....	29,800	.....
Sept.	28,100	.....	34,900	.....
Oct.	37,000	.....	41,400	.....
Nov.	30,700	.....	33,650	.....
Dec.	43,900	.....	43,950	.....
Totals	374,300	.....	519,900	.....

<sup>†</sup>Metal cutting and metal forming.

\*Preliminary.

National Machine Tool Builders' Assn.

Charts copyright, 1959, STEEL.

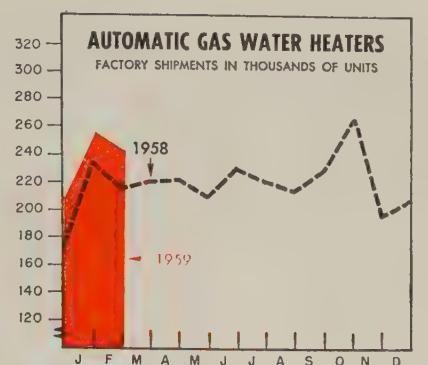
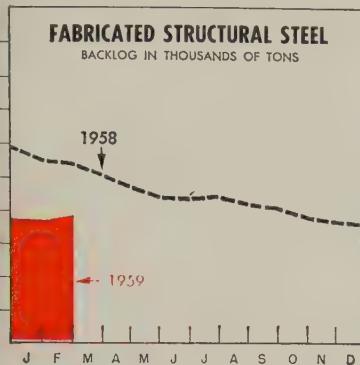
months.) The Dow-Jones industrial stock price average has been moving up almost continuously since December, 1957. The figure for March is not available, but it will be well above February's \$590.72. The average broke the \$600 mark for the first time in March and stayed there much of the month. It began to slip off gradually last week, but no drastic decline is anticipated in view of the strong showing of steels, rails, and metalworking generally.

• **Residential Building**—(Leadtime: 6.2 months.) This has been one of the strongest factors in the comeback from the recession. The floor area figure (as measured by F. W. Dodge Corp.) has been moving generally upward since February, 1958. Following the usual seasonal decline in November and December, the January figure began the early year climb. The latest Dodge report shows that "by far the strongest element in February was housing." And the \$2.3 billion total was the highest for any February on record.

• **Commercial Building**—(Leadtime: 5.2 months.) Of the eight indicators, this is the only one

which has failed to show significant improvement. Floor area in January edged up seasonally to a point slightly above the year-ago mark, but it was still considerably below the corresponding 1957 figure. However, Dodge reported for February: "The most encouraging feature of the new figures was the first upturn in industrial building contracts since the recession." Contracts rose 37 per cent ahead of the corresponding 1958 figure, and, presumably, floor area made a corresponding gain.

• **Average Workweek**—(Leadtime: 3.8 months.) Beginning in May, 1958, the average hourly workweek for all manufacturing employees began its ascent from the recession low of 38.3 hours. It hit a 21-month high of 40.2 hours in November and has settled back to 39.8 hours as of February, says the Bureau of Labor Statistics. Because of the abundance of capacity, it is not likely that the workweek will go much higher unless the economy takes on the true characteristics of a boom, or unless a national emergency arises. This factor should probably be considered neutral (at a high level) in any discussion of the business climate.



	Shipments	Backlogs	1959	1958	1959	1958
Jan.	224.3	316.7	1,794	2,778		
Feb.	216.1	282.6	1,864	2,727		
Mar.	336.6	.....	2,542			
Apr.	323.6	.....	2,387			
May	328.2	.....	2,211			
June	329.2	.....	2,191			
July	290.8	.....	2,220			
Aug.	298.0	.....	2,119			
Sept.	313.7	.....	2,047			
Oct.	307.1	.....	1,913			
Nov.	271.1	.....	1,839			
Dec.	266.6	.....	1,809			
Total	3,664.2	.....				

American Institute of Steel Construction.

	Shipments—Units	1959	1958	1957
Jan.	254,300*	235,400	214,900	
Feb.	242,400*	216,300	208,200	
Mar.	.....	221,600	226,600	
Apr.	.....	221,900	238,200	
May	.....	210,000	233,400	
June	.....	231,000	211,700	
July	.....	221,400	192,500	
Aug.	.....	215,500	210,300	
Sept.	.....	230,000	215,500	
Oct.	.....	265,900	234,700	
Nov.	.....	196,100	173,500	
Dec.	.....	207,700	172,800	
Totals	.....	2,673,800	2,532,300	

\*Preliminary.  
Gas Appliance Mfrs. Assn.

Keep  
plant  
schedules  
on time

• Orders for Durables—(Leadtime: 6.9 months.) New orders for durable goods are continuing an up-trend that started last May. The only break in the slope came in August. It was partially due to the automotive industry. No further break is expected until midsummer when steel mill orders are expected to fall off.

In the immediate future, the pluses will be counterbalanced by the minuses in the structure of our index. Still a potent factor is the steel industry, which set another record last week with a scheduled output of about 2,660,000 net tons for ingots and castings. The previous record was 2,631,000 tons, set in the week ended Mar. 22 and equaled the following week.

But automotive production is beginning to taper off as stocks of new cars in dealers' hands near the 900,000 unit mark. While output will remain well above year-ago levels, it will no longer be the expansive force in the economy it was following the settlement of the glassworkers' strike and the resumption of full production at Chrysler Corp. This factor will negate any advances in steel production as far as the production index is concerned.

For the next few weeks, electric energy production and railroad freight carloading will counterbalance each other. The electric utilities are facing a seasonal downturn, and the railroads are entering a seasonal upturn.

• Wholesale Prices—(Leadtime: 2.6 months.) Although prices remained stable during most of the recession, they climbed from a low of 119 (1947-49 = 100) in October to 119.5 in February, reports the Bureau of Labor Statistics. The index leveled off between January and February and is now 0.2 point below the all-time high of March, 1957.

## STEEL's Index Peaks Out

The evidence offered by the eight leading indicators is confirmed by STEEL's industrial production index. Starting from a low point of 118 (1947-49 = 100) in the last week of April, 1958, it has climbed all the way back to set a record of 169 during the week ended Mar. 21. That's 1 point above the previous record, set first in early December, 1956, and equaled in mid-March. The

- Personalized Service
- Availability
- Fast Delivery

These three are Pittsburgh Screw and Bolt plus factors that can keep your plant humming on schedule. Our quality controlled fasteners meet every standard of performance—but most important, we offer service. Personalized attention to cut red tape. Consequently, back-up stocks of standards are immediately available to strengthen our distributor's supply. Keep us in mind for filling complete orders—fast!

Order from your nearest Pittsburgh Screw and Bolt distributor or send for our catalog today.

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DIVISIONS  
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Southington Hardware—Southington, Conn.  
American Equipment—Norristown, Pa.



America's Most Complete Line of Industrial Fasteners

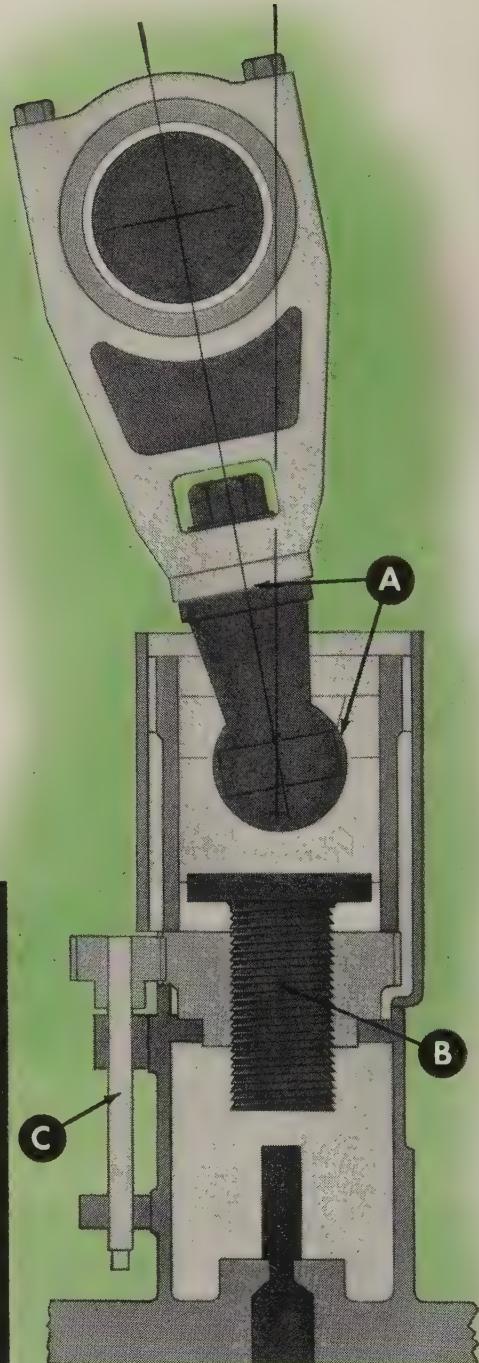
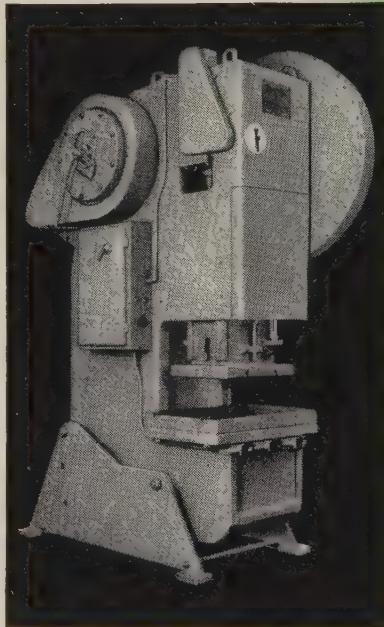
The pitman connection of the new Oliver-Farquhar O. B. I. Mechanical Gap Press provides two basic advantages... easy slide and die adjustment and extra strength.

This Oliver-Farquhar Press has

**STRENGTH**  
**where you need it...**  
*Easy slide adjustment*  
**where you want it...**

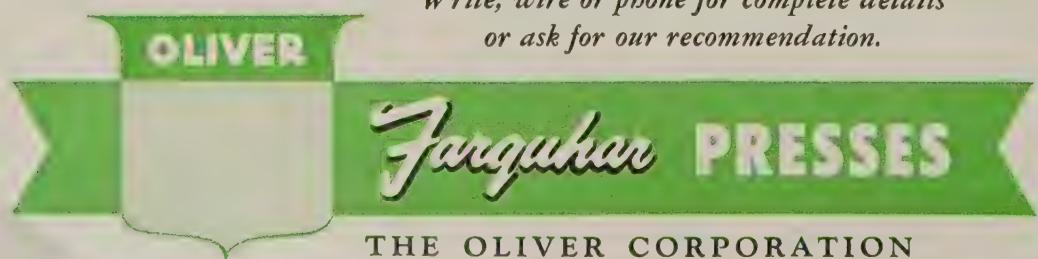
The Oliver-Farquhar O. B. I. Mechanical Gap Press has a heavy-duty barrel type pitman connection with the slide adjusting screw fully guided to eliminate side thrust and bending loads on the screw. It withstands the full loads of the press at each stroke and the shocks developed in pressing and stripping. There is no danger of bent screws and cracked or broken pitmans. For faster, easier floor level slide adjustment, a simple, directly connected shaft extends to lower end of slide. No special wrench is required for this manual adjustment.

Oliver-Farquhar O. B. I. Mechanical Gap Presses have many features—in addition to the strong pitman connection—that guarantee years of dependable, efficient service. They are available now for delivery in four standard models: 75, 110, 150 and 200-ton capacities.



Oliver-Farquhar design...  
**(A)** Critical areas are thoroughly supported for maximum strength. **(B)** Fully guided adjusting screw is held firmly in base. **(C)** Easy, floor-level adjustment.

Write, wire or phone for complete details  
 or ask for our recommendation.



THE OLIVER CORPORATION

A. B. FARQUHAR DIVISION • Press and Special Machinery Departments • YORK 55, PA.



JACK L. KENNEDY  
Bliss-Press Div. eng.



JOHN R. MORRILL  
president of Hubbard & Co.



MONTE LINDMOE  
Yuba Consolidated v. p.



WERNER A. REES  
DeWalt Div. engineering post

Jack L. Kennedy was named chief sales engineer, Press Div., E. W. Bliss Co., Canton, Ohio. He joined Bliss in 1948 and worked in the Hastings, Mich., and Toledo, Ohio, plants. He has spent the last eight years in the Canton general office as sales engineer. Mr. Kennedy assumes duties formerly held by Harold B. Morse, recently retired.

John R. Morrill was elected president, Hubbard & Co., Chicago. He resigned as general manager, Evansville Div., Bendix Westinghouse Automotive Air Brake Co. In his new post, Mr. Morrill succeeds Charles H. Dyson, who remains on Hubbard's board of directors.

James T. Workman was made administrative assistant to the president of Byron Jackson Div., Los Angeles, Borg-Warner Corp. He was general superintendent of BJ pump and oilfield products.

George J. Morton was elected president of Idaho Maryland Mines. The operating division of Idaho Maryland Mines is Sierra-Schroeder Div., Glendale, Calif., acquired by IMM in 1958 following a consolidation of Schroeder Valve Co. and Sierra Tool Co.

John W. Lyon was appointed vice president - manufacturing, General Binding Corp., Northbrook, Ill.

K. G. Hunt was named superintendent of Crucible Steel Co.'s new division of construction and maintenance, Midland, Pa., Works. H. T. Silverman was named assistant division superintendent.

Monte Lindmoe, former executive vice president, Southwest Welding & Mfg. Co., was named vice president of Yuba Consolidated Industries Inc., San Francisco, and director of sales for Yuba's operating divisions and subsidiaries.

Richard H. Koehler was appointed general sales manager, Le Roi Div., Westinghouse Air Brake Co., Milwaukee. He succeeds Jack E. Heuser, resigned. Mr. Koehler was on the staff of the president of Westinghouse Air Brake, Pittsburgh, and was director of advertising and publicity.

Leslie F. Schurck was made director of industrial engineering, Cooper Alloy Corp., Hillside, N. J. He is responsible for development of wage incentives, plant layout, methods and procedures. Before joining Cooper Alloy, he was with Fairchild Engine Div., Fairchild Aircraft Co., as chief industrial engineer.

Parker-Kalon Div., Clifton, N. J., General American Transportation Corp., named Louis Lovisek manufacturing manager; Harold Rosenberg, plant manager; Ed Holmes, planning manager.

G. R. Whitlow was named manager-export sales, Hobart Bros. Co., Troy, Ohio. He succeeds W. J. Chaffee, now director, Statistical Dept.

John A. Houston was made general manager of the Dallas plant of Joseph T. Ryerson & Son Inc. to succeed Fred W. Bush, resigned.

Werner A. Rees was appointed to the post of quality and standards engineer at DeWalt Div., Lancaster, Pa., American Machine & Foundry Co. He was with General Electric Co.'s Quality Control Dept.

Wesson Co., Detroit, elected three vice presidents, all of whom are district managers: Sy Dworecki, Chicago; James J. Smith Jr., East Paterson, N. J.; Gerald Bogner, Cleveland.

Stephen B. Elggren (sales manager), and Terrence M. Nolan (works manager), were elected assistant vice presidents, Niagara Frontier Div., Bell Aircraft Corp., Buffalo.

T. A. Sandstrom fills the new post of assistant division manager, Kollcast Industries Div., Thompson Ramo Wooldridge Inc., Minerva, Ohio.

John Alico was appointed manager of manufacturing at Walworth Co., New York.

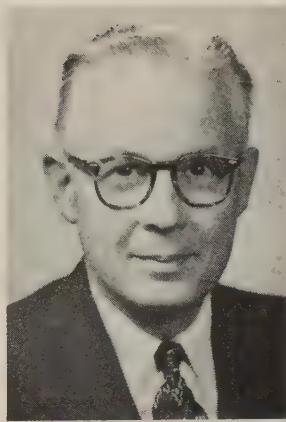
Mesta Machine Co., Pittsburgh, promoted Edward D. Mesta to assistant sales manager; Richard L. McIlavy, manager of machinery sales; John M. Edwards, assistant to the sales manager.

Dr. Herbert R. J. Grosch was made manager, space program, for International Business Machines Corp.'s Military Products Div. He is in charge of the Vanguard Center in Washington, and will also maintain liaison with the space laboratory in Owego, N. Y., and the Watson Sci-



L. S. HAMAKER

Republic Steel sales promotions



S. A. CRABTREE



GORDON N. DOW

promotions at Leschen Wire Rope



R. REX HARTUP

entific Computing Laboratory at Columbia University, New York.

**L. S. Hamaker** was appointed assistant vice president-sales, **Republic Steel Corp.**, Cleveland. He is succeeded as general sales manager by **S. A. Crabtree**, former assistant general sales manager.

**Harold C. Sager** was made manager of a new sales organization responsible for the sale of Seate (self-checking automatic test equipment), Electronics Div., Stromberg-Carlson Div., General Dynamics Corp., Rochester, N. Y.

**Robert W. Gregory** was made Indianapolis branch manager, **Kaiser Aluminum & Chemical Sales Inc.**

**R. J. Matteson** was made eastern district engineer, **Hydraulic Controls Div.**, **North American Mfg. Co.** He has headquarters in Plainfield, N. J.

**Warren Gressle** was made assistant to the manager of sales, **American Welding & Mfg. Co.**, Warren, Ohio. He returns to American Welding to fill the newly created post after 18 months with New Jersey Div., Kelsey-Hayes Corp., where he was sales manager.

**Ray V. McCadam** fills the new post of manager of equipment tube sales for **Industrial Tube Div.**, **Raytheon Mfg. Co.**, Newton, Mass. He was commercial sales representative in Los Angeles.

**George C. Stradley** joined **Michigan Chemical Corp.**, St. Louis, Mich., as group leader in charge of chemical engineering research.

**Gordon N. Dow** was named general manager; **R. Rex Hartup**, general sales manager, **Leschen Wire Rope Div.**, St. Louis, **H. K. Porter Company Inc.** Mr. Dow, who assumes responsibility for operations of the division, was general sales manager. Mr. Hartup was southeast district manager.

**Lester K. Murray**, manager of the Colorado Springs, Colo., office of **Convair Div.**, **General Dynamics Corp.**, was assigned additional duties as acting manager of Convair's office at Omaha, Nebr. He succeeds the late **Gordon Graff**.

**Cecil S. Allen** was made director of engineering, **Electrical Products Group**, **Electric Auto-Lite Co.**, Toledo, Ohio.

**Chelsea R. Phillips** was made Chicago district sales manager, **Robins Conveyors Div.**, Melrose Park, Ill., **Hewitt-Robins Inc.** He was sales manager in Hibbing, Minn., for Hewitt-Robins.

**Surface Combustion Corp.** appointed **Carl W. Sisco** Pittsburgh district sales manager; **Robert M. Snyder**, district manager, **Steel Mill Div.**, Chicago office; **Robert E. Strutner**, sales engineer, Toledo, Ohio, **Steel Mill Div.**

**W. L. Nopper** was made New York district sales manager, **Roots-Connersville Blower Div.**, **Dresser Industries Inc.** **R. G. Nancarrow** was made Philadelphia district sales manager.

**Harry C. Levenson** was made assistant to the president in charge of manufacturing of the subsidiary companies of **Landers, Frary &**

**Clark**, New Britain, Conn. He was general manager of the firm's **Landers of Arkansas Div.**, Ft. Smith, Ark. This operation is now under supervision of **Charles O. Dahl**, former manufacturing vice president for **National Presto Industries**, Eau Claire, Wis. Mr. Levenson succeeds **Frederick W. Hornbruch Jr.**, vice president of the company, who resigned.

**James R. Sexton** was appointed staff supervisor, industrial relations, **Armeo Steel Corp.**, Middletown, Ohio. He is succeeded as general office employment adviser by **David Murray**.

**Harold Christopher** and **Walter J. Case** were made assistant sales managers, New York district, **American Steel & Wire Div.**, U. S. Steel Corp. The production departments of the New York district sales office were consolidated into a single, integrated management unit. Mr. Christopher was sales manager-manufacturers' products. Mr. Case was sales manager, wire rope and construction materials.

**Walfred H. Johnson** was made New York district sales manager, **Western Brass, Metals Div.**, **Olin Mathieson Chemical Corp.**, Long Island City, N. Y.

**Clifford J. Grube** was made New York district sales manager for industrial products of **General Plate Div.**, **Metals & Controls Corp.**

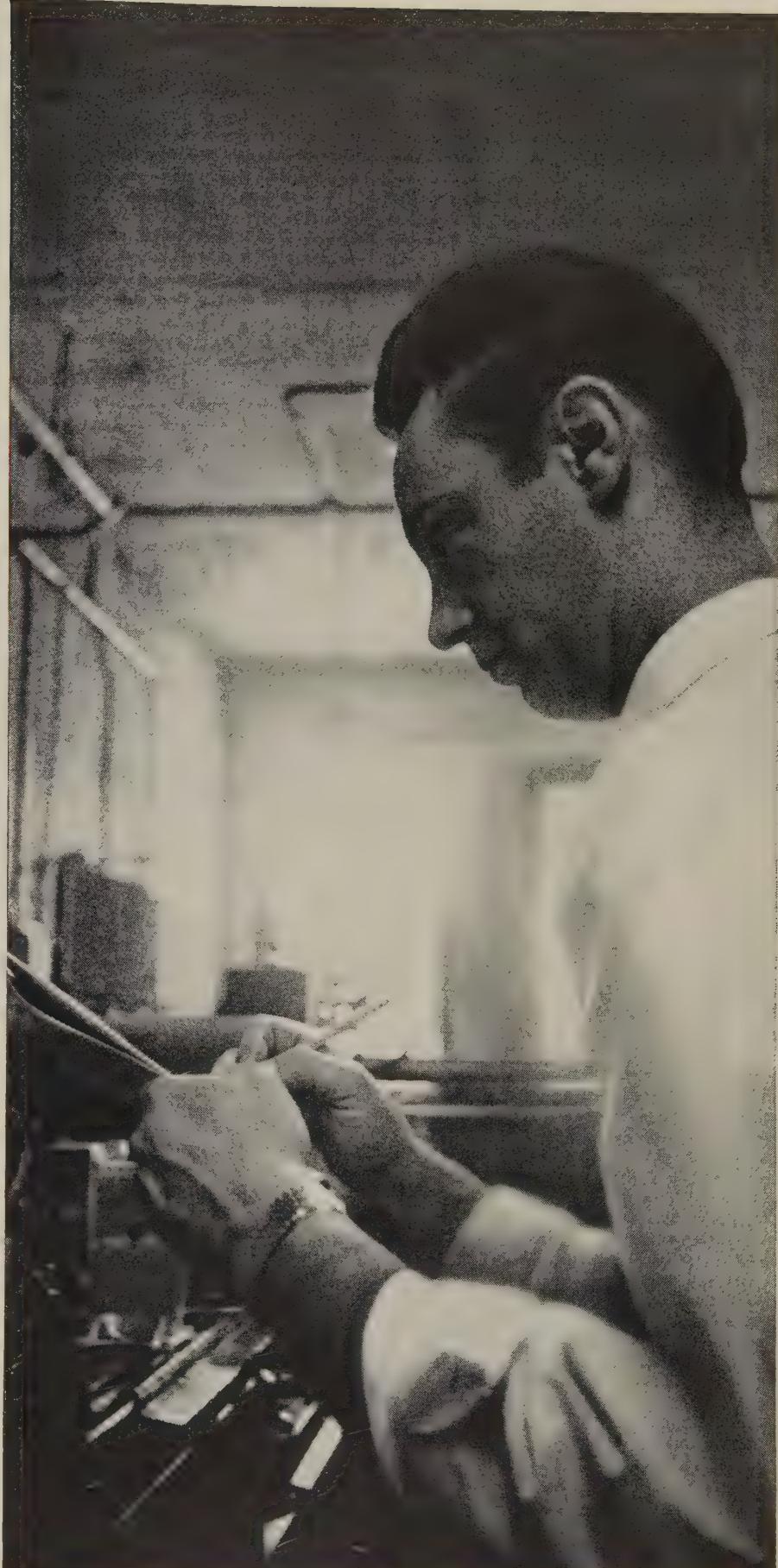
**Simonds Worden White Co.**, Dayton, Ohio, appointed **Donald R. Stewart** district sales manager; **Kenneth E. Melvin**, sales representative. Mr. Stewart is responsible for grinding wheel sales in Michigan and

## HERE'S HOW ESSO RESEARCH CAN GO TO WORK FOR YOU

The Esso Lubrication Engineer brings to your shop the vast experience and facilities of Esso laboratories and research—as a customer service.

He offers, with a broad knowledge of fuels and lubricants, considerable experience in the maintenance of equipment like yours. For instance, he can trouble-shoot cases of rapid wear and frequent overhauls... point out instances where too much lubrication is wasteful... where too little—or the wrong kind—results in unnecessary wear. And if you have an unusual problem, he can have it analyzed in one of the conveniently located Esso Sales Service Laboratories—capable of running over 500 different kinds of petroleum product tests.

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BOYD P. DOTY JR.  
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CLYDE H. WYMAN  
Exomet mgr.-Alloy Div.



LESTER M. COLE  
Warner & Swasey v. p.-sales



HARRY L. HUNTSINGER  
Potter & Brumfield exec. v. p. Onsrud v. p.-gen. sales mgr.



ROBERT M. MILLER

northern Ohio. Mr. Stewart will work under his direction.

**Lester M. Cole**, general sales manager, was elected vice president-sales, **Warney & Swasey Co.**, Cleveland. In his new post, he directs all sales activities of the company's Machine Tool Div., as well as those of the Textile Machinery Div. and Earthmoving Equipment Div.

**Bernard W. Didsbury** was made assistant general manager, Buffalo plant, **Farrel-Birmingham Co. Inc.** He was superintendent of the Ansonia, Conn., machine and erecting departments.

**Bennett Archambault**, president and chief executive officer, **Stewart-Warner Corp.**, Chicago, was elected to the additional position of chairman to succeed the late **James S. Knowlson**.

**Robert L. Carbeau** was elected president of **Universal Mfg. Corp.**, Zelienople, Pa. He succeeds **J. A. Kirkpatrick**, resigned. Mr. Carbeau was vice president-sales and finance.

**Boyd P. Doty Jr.** succeeds **Howard B. McGuire**, retired, as general manager of sales, **American Steel & Wire Div.**, Cleveland, U. S. Steel Corp. Mr. Doty was Cleveland district sales manager, U. S. Steel.

**Harry Tiffany** was appointed head of special products for **Sahlin Engineering Co.**, Birmingham, Mich. He is responsible for development of special machinery for mechanical handling of sheet metal in press-rooms.

**Clyde H. Wyman** was appointed to the new post of manager, **Alloy Div.**, **Exomet Inc.**, Conneaut, Ohio. He was chief foundry metallurgist for **L. F. M. Mfg. Co. Inc.**, division of **Rockwell Mfg. Co.**, Atchison, Kans.

**William Sivyer** was appointed manager, **Conveyor & Process Equipment Div.**, **Chain Belt Co.**, Milwaukee, to succeed **Robert T. Steindorf**, who was appointed director of research and development. Mr. Sivyer was central regional sales manager, industrial section. **Wyatt W. Dawson Jr.**, southern regional sales manager, Los Angeles, moves to Milwaukee to become central and southern regional manager.

**Frank I. Clark** was appointed vice president-sales, **Southern Steel Service Co. Inc.**, Orlando, Fla.

**William I. Pell** was appointed sales manager, **Steel Products Div.**, **Kerotest Mfg. Co.**, Pittsburgh. He was manager of pipe sales for **Colorado Fuel & Iron Corp.**

## OBITUARIES...

**Paul I. Birchard**, 54, vice president-manufacturing and engineering, **Westinghouse Air Brake Co.**, Pittsburgh, died Mar. 20.

**George Bissett**, 72, president, **Bissett Steel Co.**, Cleveland, died Mar. 29.

**Ernest C. Boyd**, 65, former vice president, **Reed & Prince Mfg. Co.**, Worcester, Mass., died Mar. 21.

**Paul D. Wood**, director of industrial relations, **Alan Wood Steel Co.**, Philadelphia, died recently.

**Alfred G. Gibbons**, 78, chairman, **National Rivet & Mfg. Co.** and **Shaler Co.**, both in Waupun, Wis., died Mar. 18.

# Steel Improvement Subsidiary Enters Electrochemical Field

SIFCO METACHEMICAL INC., a newly formed subsidiary of Steel Improvement & Forge Co., Cleveland, has acquired the business and assets of the parent firm's Electrochemical Div. It has also purchased the licensing rights in Canada and the U. S. for a specialized plating technique known as the Dalic process, previously owned by Dalic Metachemical Ltd., Toronto, Ont. (see STEEL, Jan. 12, p. 76).

Steel Improvement holds more than 80 per cent of the stock of the new subsidiary. Associates in the venture are Metachemical Processes Ltd., London, England, and Laboratories Dalic, Paris, France. Steel Improvement has purchased a one-third interest in the English firm.

• Mutual Aid—Reciprocal technical licensing arrangements with the English and French companies give Sifco Metachemical the rights to all developments by the English and French companies in the electrochemical field.

A recent development by Metachemical Processes Ltd. is the micrograin nickel process for production of nickel electroforms. A pilot plant is being set up in Cleveland. The process is being applied widely in the British aircraft industry. U. S. firms are studying many possible applications.

Headquarters of Sifco Metachemical are at 935 E. 63rd St., Cleveland. President is A. H. Milnes, who is also executive vice president of Steel Improvement. Chairman is C. H. Smith Jr., also president of Steel Improvement.

## Buys Merchant Bar Mill

Wisconsin Steel Div., International Harvester Co., Chicago, has ordered rolling mill equipment for its new \$12 million merchant bar mill from Loewy-Hydropress Div., Baldwin-Lima-Hamilton Corp., New York. The contract includes a 14 stand, continuous bar mill, rebuilding of four, 21 in. breakdown mills, and the design and supply of auxiliary equipment, such as a billet un-

scrambler, furnace pushers, shears, and conveyors.

The mill is designed for a product mix that includes rounds, squares, and other bar products, as well as angles, channels and merchant sections, flats and spring steel.

## Clearing Offering Englishmade Lathes

Clearing Div., U. S. Industries Inc., New York, will sell and service in the U. S. and Mexico a line of lathes made by T. J. Harrison & Sons Ltd., Heckmondwike, Yorkshire, England. Clearing is a leading manufacturer of hydraulic and mechanical presses of all types and has been making Axelson heavy duty engine lathes ranging from 16 in. to 120 in. The Clearing-Harrison line ranges from 11 in. to 16 in.

A. Leo West, executive vice president of Clearing, points out that the arrangement will enable U. S. plants to buy top quality lathes for about 25 per cent less than comparable American equipment. Example: A Clearing-Harrison 16-in. lathe will cost about \$4500, against \$6000 for a comparable U. S. lathe.

## Develops Shearing Line

McKay Machine Co., Youngstown, has developed a compact steel shearing line designed for companies with limited floor space and a wide variety of strip cutting jobs. The device is fitted with an electronic programming apparatus so that it can instantaneously change the length of the sheet to be cut. A. J. Wardle Jr., president, says it occupies only two-thirds the space required by old type strip cutters.

## To Make English Shapers

Gould & Eberhardt Inc., Irvington, N. J., has been licensed to make and sell Drummond Bros. Ltd. Maxicut 2A and 3A gear shaping machines in the U. S. Until the

machines can be manufactured in its own plant, Gould & Eberhardt will offer gear shapers made by Drummond at Guildford, England.

Gould & Eberhardt has granted Drummond a license to build certain sizes of its gear hobbing machines in England.

## Kearney & Trecker Forms Contract Div.

Kearney & Trecker, Milwaukee machine tool builder, has established a Contract Div. to handle all types of subcontract work for other industries. Besides contract work on special purpose machinery, the division's sales efforts will be aimed primarily at two other fields: Specialty work in the areas of aircraft, missile, and automotive production; and general purpose work which would employ such of the company's production facilities which are not otherwise available to defense industry contractors and to producers of capital and consumer goods. Officials of the division include E. H. Behrens, sales manager, and J. P. Bunce, manufacturing manager.

## Ryerson Extends Service

Prestressing of concrete by the post-tensioning method is now offered by the Reinforcing Div., Joseph T. Ryerson & Son Inc., Chicago. The facilities are at Chicago and Los Angeles.

## Seek Exposure Test Sites

The High Alloys Committee, Welding Research Council, is doing extensive field corrosion tests to determine what industrial process media cause intergranular attack of austenitic stainless steels. Industrial sites for corrosion test racks are sought. Those interested in participating in the program are invited to submit a description of the site to: R. M. Fuller, International Nickel Co. Inc., 67 Wall St., New York 5, N. Y.

## Builds Plant in Canada

American Can Co. of Canada Ltd., Hamilton, Ont., is building a \$5 million plant that will tailor tin

(Please turn to Page 134)

# "COLUMBIA-SOUTHERN to be highly satisfactory for

*says Mr. G. M. Pomeroy,  
Plant Engineer,  
Pacific Airmotive Corporation,  
Burbank, California*



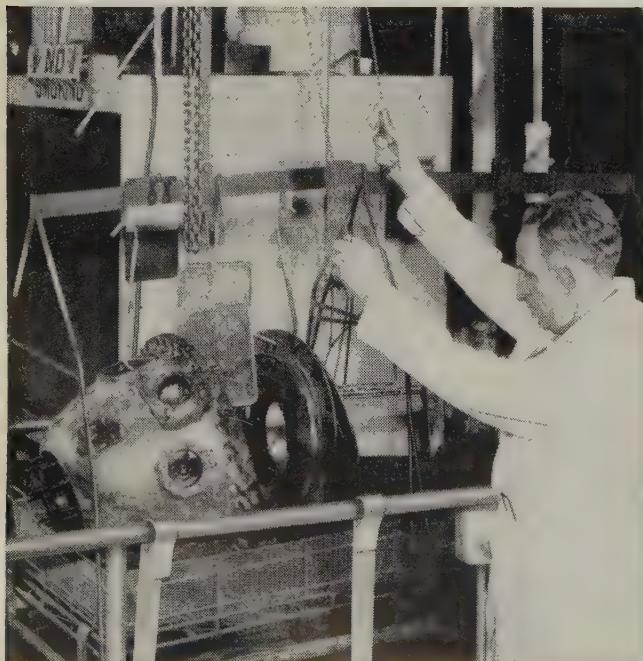
"Aircraft engine parts must be clean, and only the highest quality cleaning materials will do the job without damaging these expensive parts. Furthermore, maintenance costs are reduced because of reduction of manhours required for cleaning and maintaining of degreasers," says Mr. G. M. Pomeroy, PAC Plant Engineer.



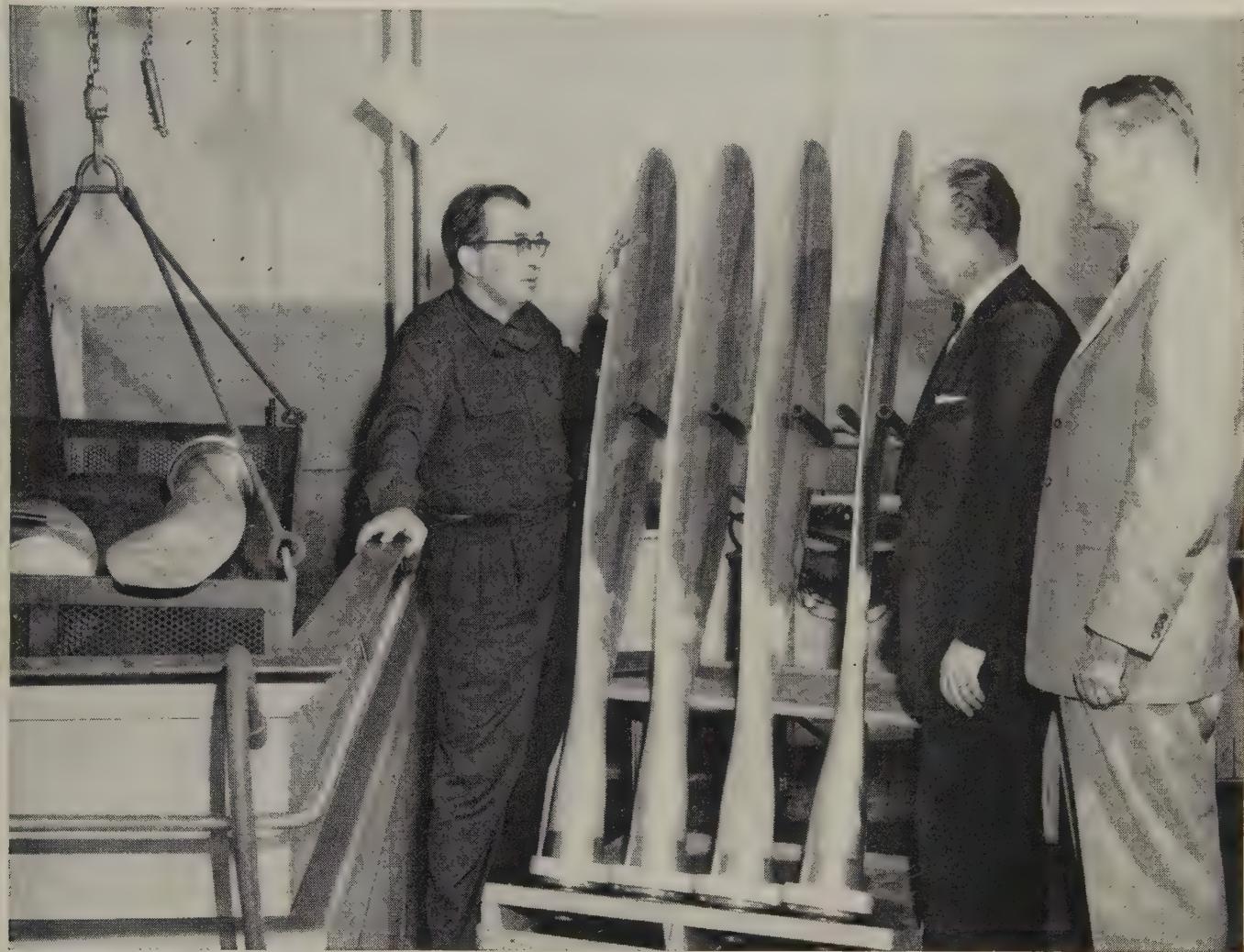
Pacific Airmotive Corporation's 30-year record of dependable aircraft and engine overhauls is unequalled in the aviation industry. It is the only FAA-approved private maintenance company authorized to overhaul the JT3 jet engine commercially. Pacific Airmotive Corporation's main plant is in Burbank, California.

**"We have had no stoppage or damage to equipment** since we started using Columbia-Southern Trichlor a year ago. It has extended our cleaning cycle per machine from 7 to 9 days, a saving of about 20 per cent. It also has reduced the actual downtime per machine during cleanout from 8 to 6 manhours, a further saving of 25 per cent."

**"Before using Columbia-Southern Trichlor** we tested many other trichlorethylenes. Many of them did an effective cleaning job, but the cleanout cycle was too frequent. Through the greater stability of Columbia-Southern Trichlor, we have extended that cycle and at the same time have increased the efficiency of our cleaning operation at Pacific Airmotive."



# TRICHLOR has proved our high standard of operation"



Mr. G. M. Pomeroy (left), Plant Engineer Pacific Airmotive; Mr. Hal Wells (center), Vice President Crown Chemical & Engineering; Mr. H. R. Sherburne (right), Sales Representative Columbia-Southern.

**"We have four degreasing machines** which can handle up to 12,000 pounds of metal per hour. The solvent we use must be highly stabilized to protect the expensive parts that have to be cleaned. Some of these parts cost up to \$12,000 apiece and we can't afford to risk the slightest damage in our cleaning operation. We have found Columbia-Southern Trichlor to be highly satisfactory for this purpose."

**"Both producer and distributor**—Columbia-Southern and Crown Chemical—give us excellent

regular service in the form of technical help. This excellent service and the great efficiency of the solvent is very much appreciated and is a real asset to our operation."

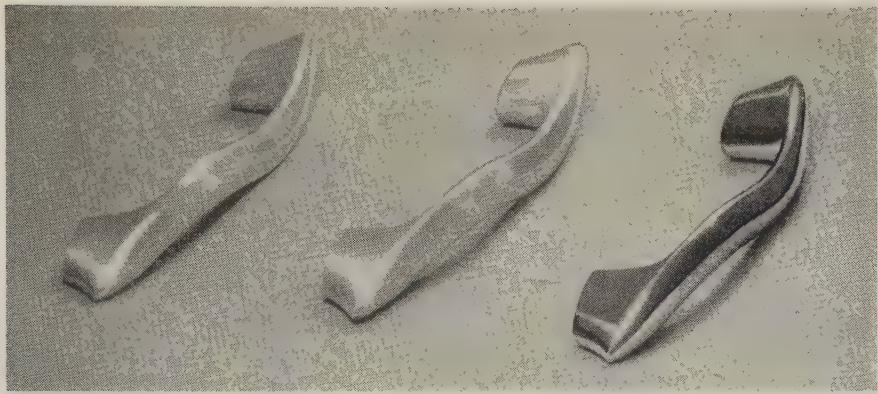
**"I can honestly state that after conclusive tests on the production line, Columbia-Southern Trichlor has provided greater savings and most efficiency in our maintenance of degreasers."**

*For more information, contact our Pittsburgh address or any of the fourteen Columbia-Southern District Sales Offices*

**COLUMBIA-SOUTHERN CHEMICAL CORPORATION**

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Three stages in the finishing of a zinc base die casting. Casting at left was buffed. Center casting was buffed and electrocleaned in Oakite 195. Casting at right was buffed, electrocleaned in Oakite 195, and plated. Note that center casting retains full buffed lustre and color after its electrocleaning in Oakite 195.

## New electrocleaner for zinc die castings assures brighter plate... and cuts rejects!

Plating of zinc base die castings now becomes a more dependable, more economical operation with the introduction of Oakite 195, a *non-etch* anodic cleaner.

More dependable because the casting surface is not etched and its color not changed or darkened. Soils and films are effectively removed, yet the castings retain their buffed lustre. To help further in preparing the way for uniformly good plating results, this new electrocleaner has excellent rinsability in hot or cold water, and low foaming tendency.

And more economical by far, because of the sharp reduction in rejects due to poor pre-cleaning.

Oakite 195 can be used with direct, reverse and periodic reverse current, in still tanks and fully automatic set-ups. Where only a single solution tank is available, it is being used to clean a variety of metals—zinc, steel, brass, copper.

For more information about this important new development in cleaning before plating, write for descriptive folder F-10466 to Oakite Products, Inc., 34 G Rector Street, New York 6, N. Y.



Export Division Cable Address: Oakite

Technical Service Representatives in Principal Cities of U. S. and Canada

(Concluded from Page 131)

plate from large coils into shapes for its Canadian canmaking plants. Tin plate mills are within a 10 minute drive by truck from the Canco plant site.

## Republic Producing Wider Steel Mesh

Republic Steel Corp. has installed new machinery to produce wide steel mesh at its Gadsden, Ala., plant. The width limit has been extended from 9 ft 6 in. to 13 ft. Much of the mesh now being used for the reinforcement of concrete in highways is being ordered in the wider sizes. The mesh is also used for buildings and for concrete pipe reinforcement. The plant's Wire Mesh Dept. has been enlarged.

## GE Quits Plastics Field

General Electric Co., Schenectady, N. Y., is withdrawing from the plastics manufacturing field. The plant and equipment at Taunton, Mass., is being sold to Haveg Industries Inc., Wilmington, Del. Much of the equipment at GE's Decatur, Ill., plant will be included in the sale.

## Will Enlarge Tube Plant

Hughes Aircraft Co., Los Angeles, has leased a 23,000 sq ft building to be erected at Oceanside, Calif., for occupancy by its Vacuum Tube Products Div. The building will adjoin the 13,000 sq ft Vacuum Tube Products plant at 2020 Short St.

## Erects Logan, Ohio, Plant

William Wallace Co., Belmont, Calif., manufacturer of gas vent pipe and chimneys, is building a \$750,000 plant at Logan, Ohio. Completion is expected by July 15.

## Gets New Coating Rights

National Research Corp., Cambridge, Mass., has licensed National Steel Corp., Pittsburgh, to use its developmental process for vacuum coating aluminum on steel sheets for containers and other products. Additional development engineering is required before commercial use

of the process for containers can be undertaken.



## CONSOLIDATIONS

Jessop Steel Co., Washington, Pa., acquired Steel Warehousing Corp., Chicago and Broadview, Ill., and will operate the property as a wholly owned subsidiary. A. J. Kueber continues as president, while F. B. Rackley, president of Jessop, becomes chairman of Steel Warehousing. Jessop will spend \$2 million "to increase warehouse stocks and to expand the Broadview installation," says Mr. Kueber.

Cadre Industries Corp., Endwell, N. Y., purchased Mastercraft Trailers Corp., Middletown, Conn., producer of boat trailers.

Universal Controls Inc., New York, acquired Grant Money Meters Co., Providence, R. I., manufacturer of automatic toll collectors and fare registers.

New York Shipbuilding Corp., Camden, N. J., will acquire Higgins Inc., New Orleans boat building firm, subject to approval by holders of 80 per cent of Higgins stock.

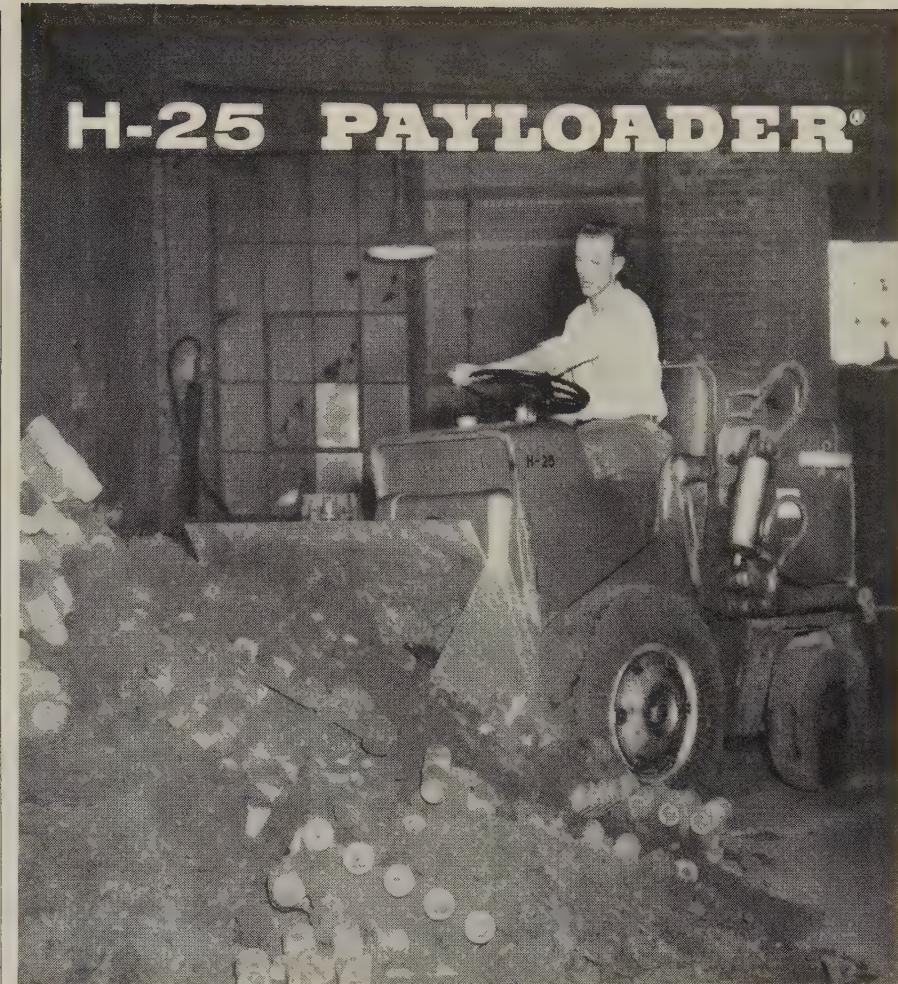
Snyder Corp., Detroit, purchased Hope Machine Co., Philadelphia. The new line of filling machines will be built in plants of Arthur Colton Co., a division of Snyder.

Hitchiner Mfg. Co. Inc., acquired Permattach Diamond Tool Co. Inc., both of Milford, N. H. and will continue to operate the property under the name of Permattach Diamond Tool Corp.

Dayton Rubber Co., Dayton, Ohio, purchased two aircraft equipment manufacturing firms: Hardman Tool & Engineering Co., Los Angeles; and Aircraft Standards Inc., Santa Monica, Calif., manufacturer of tools, dies, and fixtures.

Whitin Machine Works, Whitinsville, Mass., has arranged to purchase American Type Founders Co. Inc., Elizabeth, N. J. Whitin manufactures textile preparatory ma-

(Please turn to Page 140)



## "bigger loads—faster—more powerful—considerably shorter turning radius"

Mr. O. W. Street, Gen. Supt. of Parker-Street Castings Company, Cleveland, Ohio also adds that "the Model H-25 'PAYLOADER' is superior to any previous sandmoving equipment used—also does numerous jobs previously impossible to do with our other loaders."

### 360 Tons Per Day

This gray iron foundry uses the H-25 for three basic jobs each day: pick-up of sand and castings from the floor and delivering same to shake-out; moving sand from shake-out to muller; delivering sand to the many molding stations. Average haul is 140 feet and the amount moved daily is 120 tons in each operation, or 360 tons total.

THE FRANK G. HOUGH CO.  
876 Sunnyside Ave., Libertyville, Ill.

Send Model H-25 PAYLOADER data.

The greater carry capacity of the Model H-25 (2,500 lbs.) is 25 to 50% more than heretofore available in a tractor-shovel with 6-ft. turning radius. The power-shift transmission, torque converter and power steer make it fast cycling and easy operating. Power-transfer differential—another exclusive in its class—gives the Model H-25 better traction on loose or slippery footing.

Get the facts on the Model H-25 from your Hough Distributor.

**HOUGH**  
THE FRANK G. HOUGH CO.  
LIBERTYVILLE, ILLINOIS  
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_



*It will be business as usual*

## *at Smith & Cross*

**... with the help of the Aetna Life's Business Planning Department**

Arthur H. Smith and Robert Cross are partners in a machinery business. Their company has grown over the years and looks to a prosperous future. Both Smith and Cross are known as good businessmen. They are aware that when either of them dies the partnership, by law, ceases to exist. The surviving partner and the heirs of the deceased partner are left to pick up the pieces. Therefore, with the help of their Aetna Life representative, attorney and accountant, they set up a plan to assure continuation of the business and security for their own families. If you own or operate any kind of business, it will pay you to investigate the vital need for a business continuation plan — and no one is better equipped to serve your interests than the Business Planning Department of your local Aetna Life General Agency.

**AETNA LIFE**  
INSURANCE COMPANY

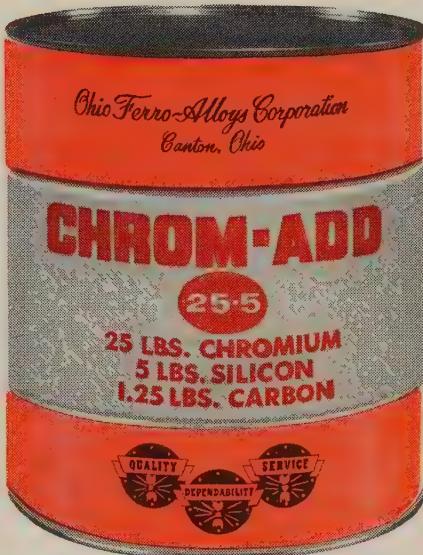
*Affiliates: Aetna Casualty & Surety Co. • Standard Fire Insurance Co. • Hartford, Conn.*



NEW EXOTHERMIC ALLOY!

# CHROM-ADD

## 25-5



# THE CHROME YOU NEED THE SILICON YOU WANT

....and at Lower Cost!

You can now reduce your chromium and silicon costs with CHROM-ADD 25-5, a new exothermic alloy from Ohio Ferro-Alloys.

CHROM-ADD 25-5 was developed specifically as an economical way to add chromium and silicon to open hearth steel. CHROM-ADD 25-5 embodies the convenience and consistently high alloy recovery you've come to expect of exothermic ladle additions. Costs are competitive with practices that now require furnace additions of lump alloys. You also eliminate the costs of weighing and

handling bulk alloys, save furnace time . . . reduce fuel and refractory costs.

CHROM-ADD 25-5 is packed in sealed steel cans each containing 25 lbs. of chromium and 5 lbs. of silicon. For each 1% chromium addition, you get .20% silicon. Consequently, supplemental ladle additions of ferrosilicon are substantially reduced or, in many cases, not required at all. Get the facts now on CHROM-ADD 25-5 . . . the accurate, convenient and economical way to produce chromium steel in the open hearth. Our nearest sales office will be glad to give you full details.

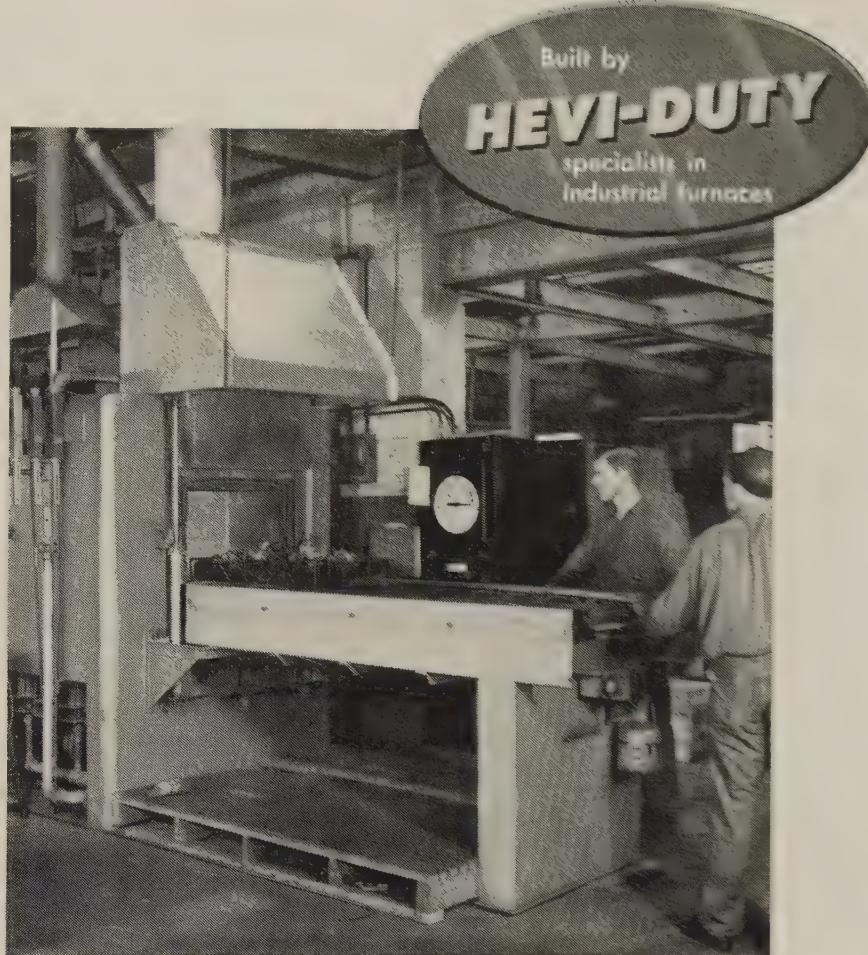


Ohio Ferro-Alloys Corporation  
Canton, Ohio

Birmingham • Boston • Chicago • Denver • Detroit • Houston • Kansas City • Los Angeles  
Minneapolis • Philadelphia • Pittsburgh • Salt Lake City • San Francisco • Seattle • Vancouver, B.C.



ANOTHER ADVANTAGE  
Pallets holding six  
cans for convenie  
handling and storag



## Clean-Line Furnaces Demonstrate The Ultimate in Automatic Heat Treating At Superior Metal Treating Corp.

Superior Metal Treating Corp., Muncie, Indiana, was so pleased with the performance of a Clean-Line furnace under conditions that really test — and prove — heat treating equipment, that they recently installed a second identical furnace. The Hevi-Duty furnaces are used 24 hours a day, 5 days a week for carburizing, carbonitriding and bright hardening. Heating and cooling, or oil quenching, are automatically timed and controlled. The operations are done under protective atmosphere.

The furnaces produce full uniform hardness and depth, even in 500-lb loads of small parts. Heating cycles are as short as 20 minutes, and temperatures range up to 1925° F.

In the original furnace, radiant tubes are still in good condition after a year of use under these demanding conditions. This Clean-Line furnace uses only about 300 CFH of prepared atmosphere, further evidence of its excellent efficiency.

Perhaps this combination of durability and automatically controlled production has a place in your heat treating operation. For full information, write for Bulletin D-100.

- Industrial Furnaces electric and fuel
- Laboratory Furnaces
- Dry Type Transformers
- Constant Current Regulators



chinery, ATF, operating in the graphic arts field, will continue to do business under its present name at its Elizabeth offices.

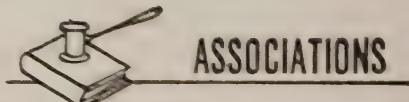
Vanadium Corp. of America, New York, will merge Keokuk Electro-Metals Co., Keokuk, Iowa, into the corporation upon stockholder approval.

Pfaudler Permutit Inc., Rochester, N. Y., has purchased Ideal Welding Co. Ltd., Toronto, Ont., a metal fabricator. It will become a wholly owned subsidiary.

National Cored Forgings Inc., Norwalk, Conn., a subsidiary of Bridgeport Brass Co., Bridgeport, Conn., since 1955, has been integrated with the parent company, operating as the Cored Forging Div. No organizational changes have been made.



Nice Ball Bearing Co., Philadelphia, has broken ground for a new plant addition in Montgomery County, Pa., about 30 miles north of the present plant. Adding 40,000 sq ft of manufacturing area, it is the company's four major expansion since World War II. Plans call for the eventual completion of 275,000 sq ft at the new site.



Metal Grating Institute, Pittsburgh, elected J. Edinson vice president. He is general sales manager of the Klemp Metal Grating Corp., Chicago. Hanson & Shea Inc., Pittsburgh, has been retained to provide management services.

Zirconium Association has been organized at 2130 Keith Bldg., Cleveland 15, Ohio. W. B. Thomas is executive director. Members include companies that produce, melt, and process the metal.

Industrial Heating Equipment Association has elected Robert K. Baker, assistant manager, Industrial

manufacturers taking a long, hard look at steel buying policies; more and more of them cutting costs by purchasing more steel as it's needed and ready for production from modern Steel Service Centers.



## "Critically needed alloys make 24-hour deliveries a must!"



Prompt deliveries from U. S. Steel Supply help keep this F-27 production line on the move!

The Fairchild F-27, first American-made turbine-powered airliner.

says Mr. V. N. Thacker, Assistant Materials Manager, Fairchild Aircraft & Missiles Division, Fairchild Engine & Airplane Corporation, Hagerstown, Maryland

"We're now producing the first American-made turbine-powered airliner—the Fairchild F-27 Propjet," says Mr. Thacker. "Naturally, during the first months of production with an all-new aircraft modifications are necessary. But despite these changes, which result in last-minute orders, U. S. Steel Supply gives us delivery of the material we need . . . when we need it."

"Here's an example: We ordered 50 feet of 4130 steel, measuring  $\frac{3}{8}$ " x 1", which we

needed within 24 hours. Granted, it was a small order, but it was *vital* to the F-27. U. S. Steel Supply delivered it in less than a day, saving many valuable man-hours."

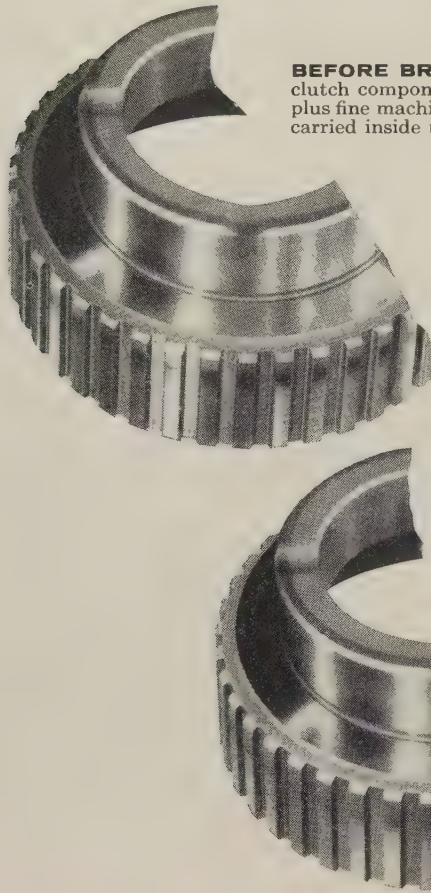
Why not take a close look at *your* steel buying policies—you'll find U. S. Steel Supply's pamphlet entitled "Value Analysis at Work" very helpful. Write to our Chicago Office, or call your nearest U. S. Steel Supply Steel Service Center. You'll find us in the Yellow Pages listed under *Steel*.

*USS* is a registered trademark

**U. S. Steel Supply**  
Division of  **United States Steel**

Steel Service Centers and Complete Steel Strapping Service at: Baltimore, Birmingham, Boston, Chicago, Moline, Cleveland, Houston, Dallas, Los Angeles, Milwaukee, Newark, Southington (Conn.), Philadelphia, Seattle, Portland (Ore.), Pittsburgh, St. Louis, St. Paul, San Francisco. • General Offices: 208 South La Salle Street, Chicago 4, Ill.

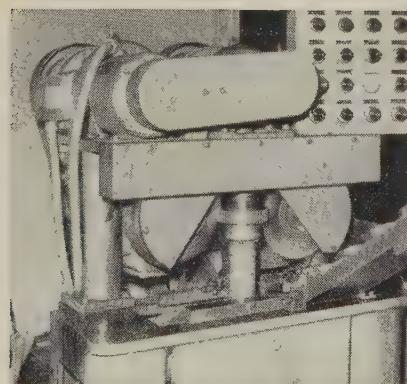




**BEFORE BRUSHING**—Automotive clutch component . . . with sharp edges plus fine machining chips and burrs still carried inside teeth.

## Precision finish . . . in 7 seconds flat

...capacity 360 parts-per-hour with OSBORN Power Brushing



**TWIN POWER BRUSHES** deburr and edge-blend these parts on 7-second cycles. Osborn 6" Monitor® Brushes—operating at 1750 rpm—do the job at high production rates. Quality is excellent . . . cost is low.

If you precision finish parts, and want to do the job faster . . . with improved quality . . . at less cost—today's Osborn Power Brushing methods can help you do it.

For example—this leading automotive parts manufacturer uses a dual-brush setup to automatically deburr and edge-blend precision clutch parts. In addition to the versatility and *precise quality control* he's afforded by Osborn Power Brushing—he finds finishing operations are done faster and at significantly lower cost.

It's typical of how you can pinpoint savings, too. An **Osborn Brushing Analysis**—made in your plant at no cost or obligation—is the first step. Write us for full details. *The Osborn Manufacturing Company, Dept. S-6, Cleveland 14, Ohio.*

*Osborn Brushes*



BRUSHING MACHINES • BRUSHING METHODS  
POWER, PAINT AND MAINTENANCE BRUSHES • FOUNDRY PRODUCTION MACHINERY

Equipment Div., R. C. Mahon Co., Detroit, chairman of the newly created Oven Div.



## NEW ADDRESSES

American Smelting & Refining Co., New York, moved the Detroit sales office of its Federated Metals Div. to 522 New Center Bldg., 7430 Second Ave., Detroit 2, Mich.

Headquarters of the general sales manager, G. H. Sanborn, and the assistant general sales manager, Stewart Barton, of Fellows Gear Shaper Co. have been transferred from Detroit to the main plant in Springfield, Vt. The Detroit branch office will be continued with A. R. Tobin as manager.

National Tank & Boiler Co., Hazelwood, Mo., has moved to its new plant and offices. The mailing address is P. O. Box 126.



## NEW OFFICES

Eastern Stainless Steel Corp., Baltimore, opened a branch sales office at 5935 S. Pulaski Rd., Chicago 29, Ill. Timothy F. O'Connell is the Chicago representative.

Bohn Aluminum & Brass Corp., Detroit, opened a district sales office at Grand Rapids, Mich., with L. K. Moore as district manager.

Charles Bruning Mfg. Co. Inc., Mt. Prospect, Ill., opened a branch office at Portland, Oreg.

Commercial Contracting Corp., press erectors and industrial equipment installers, moved to 32217 Stephenson Highway, Madison Heights, Mich.

Black & Decker Mfg. Co., Towson, Md., has opened a factory service branch at 227 Varick St., New York.

Borg-Warner Corp., Chicago, has opened a midwest district office at 2603 State St., Alton, Ill., for the application and sales of crane equipment.

## Technical Outlook

April 6, 1959

**COOLER CRUCIBLES**—Use of air cooling for molds, instead of water cooling, will help prevent explosions in melting zirconium and other reactive metals, reports the Bureau of Mines, Department of the Interior. Most of the vessels it tested were copper. One, with cooling fins, was 35 per cent more efficient than the water cooled types. Another approach: Maintain a skull of reactive metal in the crucible to dissipate heat generated during melting. (See STEEL, Mar. 9, p. 64.)

**LATHE PAYOFF**—A tape controlled turret lathe has cut 25 per cent off the setup and machining time for an aircraft builder. A report from Potter & Johnston Co., Pawtucket, R. I., says the machine, working on a regular production schedule, uses a punched tape that has eliminated up to 2 hours' setup time on some jobs.

**MOLYBDENUM OUTPUT BOOSTED**—Single stage reduction of molybdenum oxide could increase production of molybdenum powder five to eight times, claims Metals & Residues Inc., Springfield, N. J. B. H. Davidson, technical director, says the new process saves energy, makes purer metal, and recovers a higher percentage of metal from the oxide. Formerly, the oxide was reduced in two steps; to brown oxide at about 840° F, then to metal at about 1830° F.

**BURY BUSHINGS IN PLASTIC**—Increasing use of plastics for drill jigs and fixtures calls for special bushings, says Ex-Cell-O Corp., Detroit. The company makes fluted bushings, to be pressed into holes in soft, ductile materials, and herringbone-serrated bushings that are embedded in castable materials. They're made of standard bearing steel.

**GOOD NEWS FOR HONEYCOMB**—Aircraft and missile production is getting a helping hand from several new brazing techniques developed by North American Aviation Inc., Los Angeles. One eliminates 95 per cent of the argon formerly thought necessary for quality; another, called quench press brazing, eliminates the warping in small, shaped parts; a third method heats

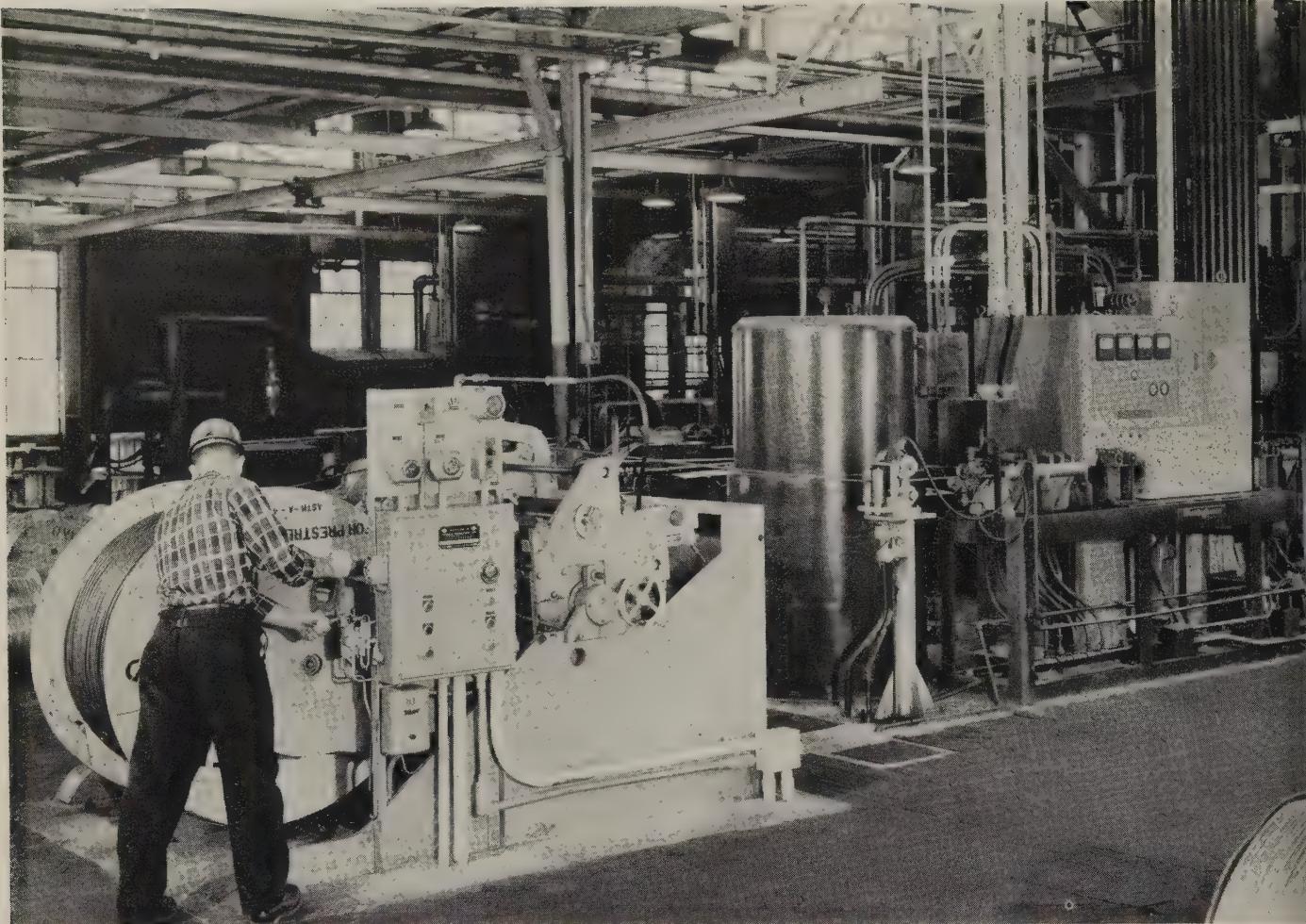
parts electrically (the parts themselves are resistance elements in an electrical circuit). North American experts say that the new brazing techniques have done much to overcome the honeycomb production problems for aircraft like the chemically propelled B-70 bomber and the super-secret F108.

**HIGH TOP PRESSURE MADE SAFER**—The practice of increasing top pressure to boost blast furnace output is gaining popularity among steelmakers. It's said to be safer when copper mantle plates are secured in their holders with Esscolator plate seal, a product of Esscolator Mfg. Co., Pittsburgh. It resists corrosion, abrasion, and friction. It can take temperatures of -40 to 400° F. It's easy to apply to any clean, dry surface, and cures at room temperature in 4 to 6 hours. For a quick seal, it can be cured with external heat in less than 5 minutes.

**TANTALUM GAINS**—Use of tantalum to make bayonet heaters for acid condensers and other process equipment is announced by Pfaudler Co., Rochester, N. Y., a division of Pfaudler Permutit Inc. The metal's high heat transfer rate, ductility, and resistance to physical or thermal shock make it suitable for use in the heaters, says Pfaudler. Because of its acid resistance, thinner walls can be used for more effective heating.

**EXPLOSIVE FORMING IN SPACE**—An entire missile or space platform may be formed in one piece with explosives, say experts who attended the Western Metal Congress at Los Angeles. One of them says explosives form an excellent aerodynamic shape. Space platforms components would be assembled on the ground and put into orbit before the explosives were detonated.

**TUMBLING DEEP FREEZE**—Barrel finishing will replace hand trimming for rubber parts, says Almco, Queen Products Div., King-Seeley Corp., Albert Lea, Minn. Its tumbling machines are refrigerated. Rubber parts, frozen with liquid carbon dioxide, have a metallic hardness. They're finished easily in tumblers.



Stranded steel cable passes through a looping tower and into induction coils for annealing. After quenching, it's wound on takeup reels.

## Induction Heating Equipment Is Fast, Flexible, Economical

Heaters should be tailored to applications. Purchase price, installation cost, and local electric rates must be considered in choosing the right unit for your plant

FACED with a heating problem in annealing, hardening, forging, or extrusion?

You'll want to look into the advantages offered by induction heating equipment.

You can learn how it has paid off in other plants and get some tips on using it in yours by reading a few case histories. They were collected by John Edwards, manager, Industrial Electronics Dept., Westinghouse Electric Corp., Baltimore.

- **Heating Is Controlled**—Induction heating can be used in diverse applications; it can also be tailored to job requirements. Depth of hardness is easily controlled; short heating time (for metallurgical reasons or to reduce scale) is possible; and desired heat can be accurately maintained.

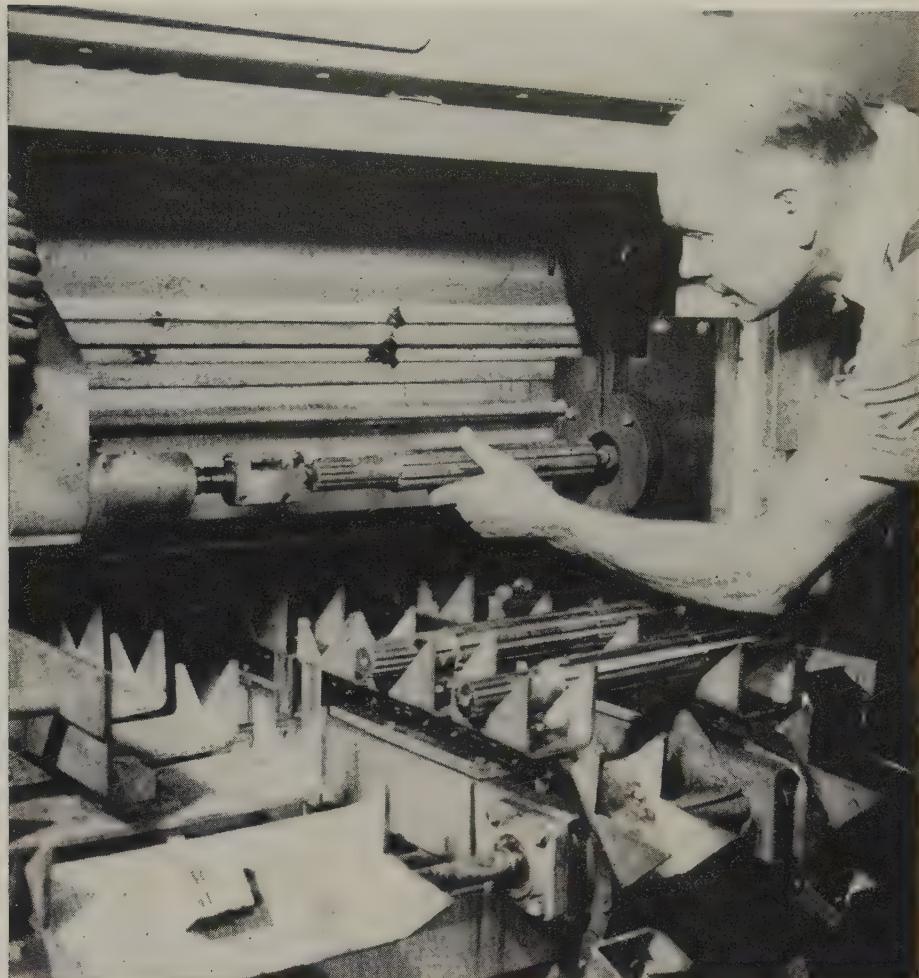
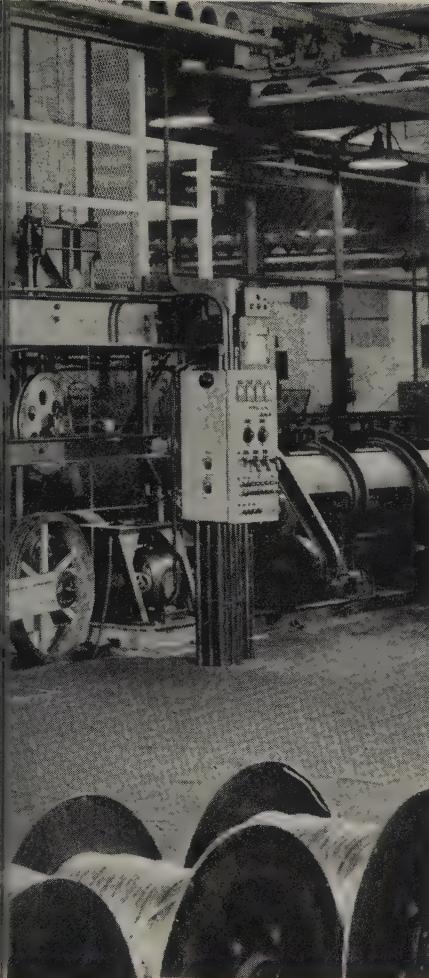
Selective heating makes it possible to harden only the four contact areas on a rocker arm shaft, leaving the other sections untreated.

So, the shaft can be fed through a roll straightener without cracking the surface or leaving high residual stresses in hardened areas.

Shafts are rotated during heating and moved steadily through a heating coil and quench. They can be straightened automatically at low cost. The reject rate is low.

- **Choosing Equipment**—When induction heating equipment is purchased, the cost of radio frequency and motor-generators should be compared. Installation costs and operating efficiency of each should be studied.

The cost of installing radio frequency equipment is 3 to 6 per cent of purchase price, vs. 5 to 8 per cent for a motor-generator setup. Radio frequency generators operate at about 50 per cent efficiency, while motor-generators operate at about 80. Efficiency data should be obtained from the manufacturer for the size and frequency of the unit needed.



Operator checks tractor axle for proper centering in the hardening machine. Parts are positioned in the machine by an automatic conveyor.

The duty cycle in each application must be considered. In many cases, full power will not be drawn continuously. Result: Lower power costs.

If operating efficiency, duty cycle, and local electric rates are known, energy cost can be calculated for the heating operation.

• **Case History**—Cable used in prestressed concrete is annealed automatically in one steel plant, saving the company about \$18 a ton. The product isn't contaminated, and there's little heat loss.

The equipment anneals  $\frac{1}{2}$  in. cable at 250 fpm (or about 8000 lb per hour). Temperature is held within  $30^{\circ}$  F of a specified  $625^{\circ}$  F, while cable speed is 25 to 200 fpm; at production speed, temperature varies only  $10^{\circ}$  F.

The system backs up to anneal short lengths only partly heated when the machine stops, eliminating scrap.

Equipment was purchased for

## Four Advantages of the Method

**There's no thermal lag as heat is turned on or off; it's generated rapidly in the material being treated.**

**Accurate control restricts heat to specific areas or depths; there's no appreciable radiation.**

**Materials aren't contaminated by the heat source, and scale is held to a minimum.**

**Equipment takes little floor space; it can be integrated with other automatic production machines.**



Valve ports in automobile cylinder heads are hardened with induction heating equipment. Production costs are cut because inserts are no longer needed

\$68,900. Operating cost, including a part time operator, is \$3.93 an hour.

• **Valve Ports Hardened** — Valve seats take a beating and ports tend to erode in V-8 engines. Automobile makers can save \$1 to \$1.50 on each cylinder head through selective hardening, and elimination of inserts.

A complete motor-generator induction hardening system can be purchased for about \$73,000. Power, maintenance, and labor costs total about \$2.60 an hour (labor is estimated at \$2 per hour). Operating two shifts a day and processing 125 heads an hour, the system will save about \$425,000 a year.

• **Helps Make Valves** — Upsetting, the final step in making automotive valves, is done more economically by a large manufacturer with three induction heating systems. Each heater, powered by a 50 kw, 10 kc motor-generator set, heats valve "onions" to 2100° F, turning out 1800 pieces an hour. Capital investment for each unit is \$37,000; the power and maintenance cost is 96 cents per hour.

Short heating time minimizes heat

conduction in the valve stems. Each unit has a short zone heating coil and an automatic turntable. They are incorporated in fully automated lines.

• **Savings on Axles** — Two horizontal, axle hardening machines have processed 15 million axles in one automobile plant; no metallurgical failures have been reported. Inspection and control of steel composition are cut to a minimum; less pretreatment is required because heat stored in the axles produces some stress relief. Distortion is said to be less than with other hardening methods; and straightening costs are reduced.

It cost \$195,400 to install the machines. Better hardening permits use of less expensive steel, and saves the company 30 cents on each axle. Processing 425 axles an hour, and operating on two shifts, the machines save \$434,000 a year. Both machines are operated by one man; power, maintenance, and labor costs come to only \$10.40 an hour.

Makers of farm machinery are also cutting costs by hardening axles with automatic induction heating equipment. Greater strength, resulting from a hard case and tough

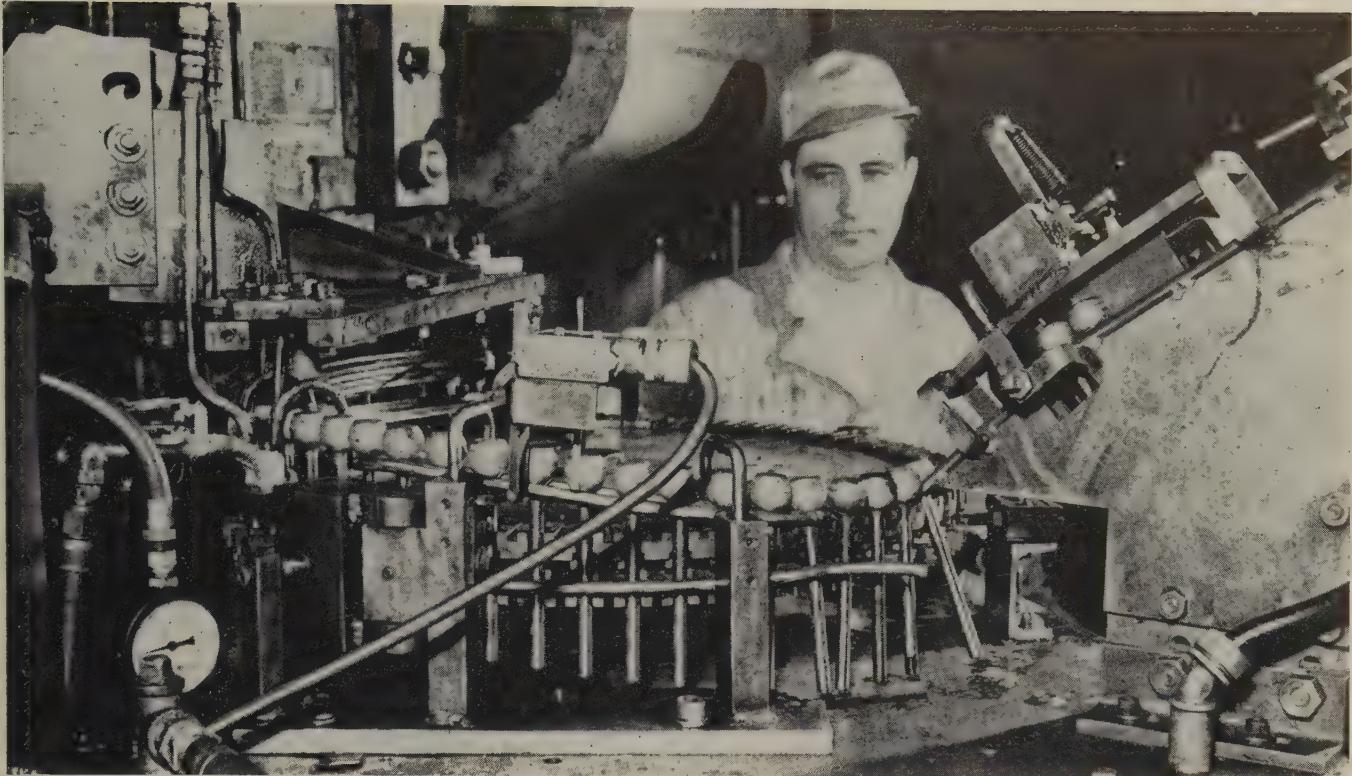
core, makes it possible for smaller axle shafts, housings, bearings, and gears to carry greater loads. The system is operated by one man; use of less expensive steel cuts material costs \$1 per axle, and machining costs are reduced.

A typical setup, costing \$70,100, processes 15 tractor axles an hour. Total operating cost for the equipment is \$4.75 an hour. In two shift operation, \$60,000 a year is saved in material alone.

• **Forging Aided** — Induction heating, using motor-generator frequencies, is gaining popularity in steel forging operations because of favorable capital and operating costs and the small amount of scale produced.

A typical installation in an automotive forge plant includes three connecting rod billet heaters. The units, drawing power from a 1250 kw, 3 kc, motor-generator set, heat 1000 billets, 13 in. long, to 2250° F in an hour. Each billet is heated in 3 minutes. Cost of the equipment, including three forging machines, was \$194,100; it's operated for only \$14.70 an hour.

Two large companies recently installed 60 cycle induction equipment to heat billets as heavy as



This automatic induction heater prepares heads of partly finished automotive valves for upsetting. In an hour, it heats 1800 of the parts to 2100° F

190 lb before they're forged into 8 in. shell blanks. Two horizontal, hydraulic, pusher type machines feed billets in a continuous line through the heating coils at a rate of 14.2 tons per hour.

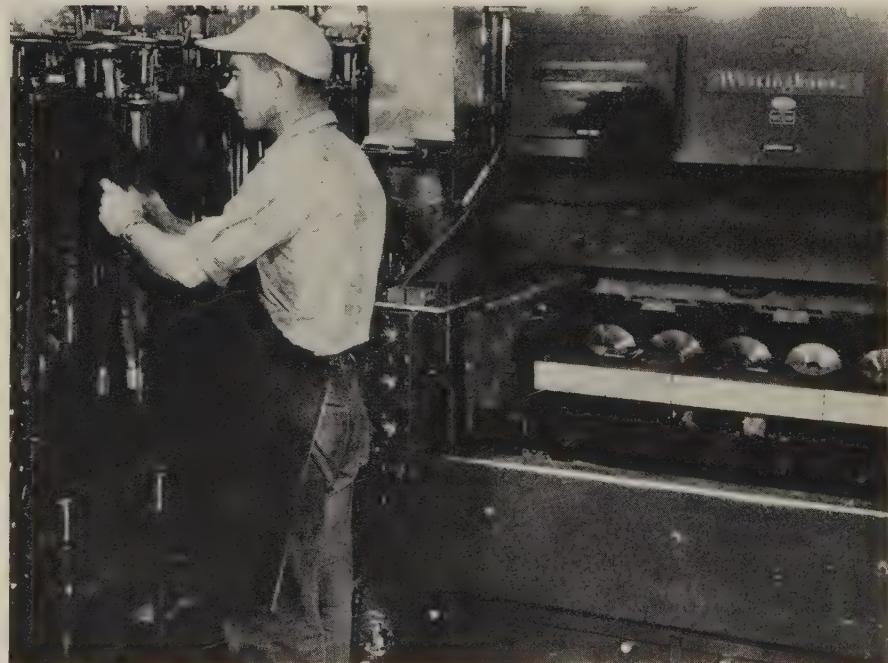
Seven temperature levels are maintained in a 20 ft long induction heating area that keeps billets at the right temperature during standby periods. Forging can be resumed immediately after a short shutdown.

Total cost of the setup is \$317,300; operating cost, exclusive of labor, is \$46.64 an hour.

At one plant, a power system supplies 6000 kw at 960 cycles, and 7650 kw at 60 cycles, to six billet heaters — horizontal, hydraulic, pusher type. The system heats 40 tons of 8 by 3½ in. billets an hour, feeding six 105 mm shell forging press lines. The heating system cost \$1,056,616; operating cost, exclusive of labor, is \$152 an hour.

• **Low Frequency Heating** — The lowest induction frequency—60 cycles—is often used to heat nonferrous bars and billets, 5 in. or more in diameter, for extrusion.

Typical is a unit used in a number of aluminum plants to heat bil-

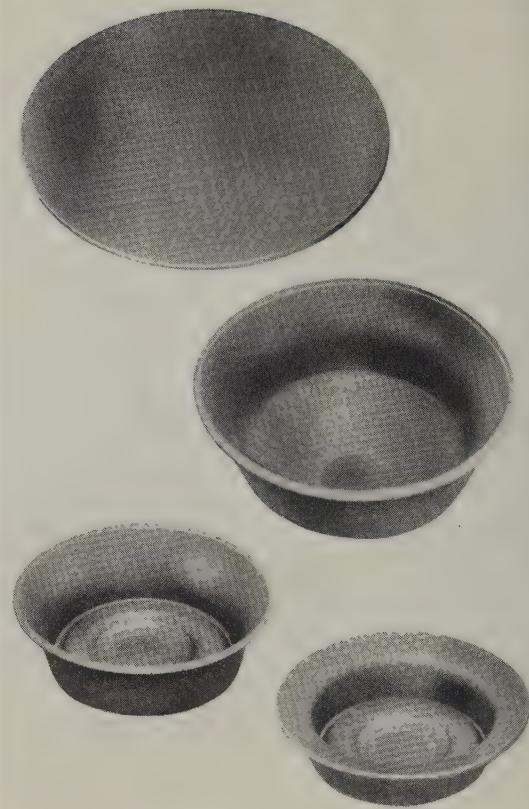
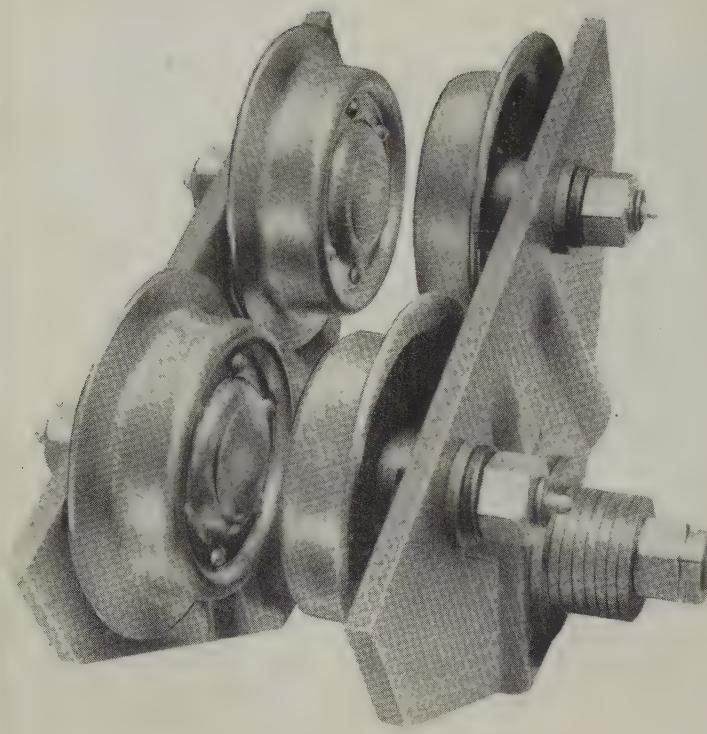


Auto axles are taken from the conveyor and placed in the induction hardening machine. Better heat treating cuts costs through use of less expensive steel

lets, 6 in. OD, 8 to 36 in. long. The heater costs about \$50,000. It heats billets to 900° F, at the rate of 5000 lb per hour. Power cost, at 1 cent per kw-hr, is about \$6.40 an hour.

Low frequency equipment is also

being considered for heating copper wire bars before they're rolled. Available equipment will heat a 250 lb bar to 1750° F in only 2 minutes. It can be purchased for \$270,700, and operated for \$22.92 an hour, exclusive of labor.



Beryllium copper wheels eliminate sparking on this chain hoist trolley. Wheels are made from Berylco 25 alloy strips. A 75 ton press forms the blanks

## Beryllium Copper Eases Trolley Fire Hazard

This nonsparking material has good electrical conductivity, high strength, corrosion resistance, and wears as well as steel. Most processing can be done with same tools

LOOKING for a satisfactory non-sparking material? Consider beryllium copper. It was selected for use in hazardous atmospheres by Saginaw Products Corp., Saginaw, Mich.

• **Problem**—Saginaw has material handling equipment in the vicinity of paint spray chemical treatment, and explosive manufacturing facilities. Sparks from steel trolley wheels on overhead conveyors or

chain hoists could cause a fire.

In its search for a nonsparking material, the company eliminated fiber wheels (low heat resistance); brasses and bronzes (too soft); and aluminum (corrosion). Some stainless steels had the necessary wear and nonsparking properties but were difficult to form.

• **Solution**—Saginaw chose beryllium copper for a complete line of trolley wheels. It is used for the

outer shell of the wheel, which serves as a wearing surface and as a separation of the steel components from the steel track.

• **Why?** — Beryllium copper has good electrical conductivity, high strength, and wears as well as steel. In addition, it may be processed with basically the same tools as steel.

The Berylco 25 alloy has these properties: Tensile strength, 165,000 psi; elongation, 5 per cent in 2 in.; hardness, 36 Rockwell C; electrical conductivity, 22 per cent minimum.

• **Fabrication**—A 60 ton blanking press punches out flat discs from the beryllium copper strips (0.097 and 0.120 in. thick). A 75 ton press forms the blanks into a bowllike shape. Four to eight forming steps may be required.

Hardness is developed by heat treating. Saginaw's usual treatment is about 3 hours in a gas fired oven at 600° F. Following blasting with G-40 malleable grade shot, parts are ready for assembly.

## Paper Wipers Ease Recovery of Metals

Precious metal processor burns discards, then melts the chips recovered from the ashes

SAVINGS of up to \$1000 a month are being realized at a west coast plant in the recovery of precious metals from incinerated paper wipers.

Wilkinson Co., Santa Monica, Calif., produces dental alloys, and metals for transistors, semiconductors, and electronic tubes. Recovery of such metals as gold, platinum, and iridium has substantially reduced the company's expenditure for new metals.

After discarded wipers have been burned, the ashes are lowered into a furnace where the metal is liquefied. Collected as "buttons," alloys of the metals are worth \$20 to \$100 an ounce.

• **Wiping Problems**—Before the recovery program was installed, the firm used cloth wipers. The precious metal particles were lost when they were discarded, making a sizable dent in Wilkinson profits.

Also chips on re-used rags damaged many of the products in manufacture, and lint from the cloths clogged dies for fine wire drawing operations.

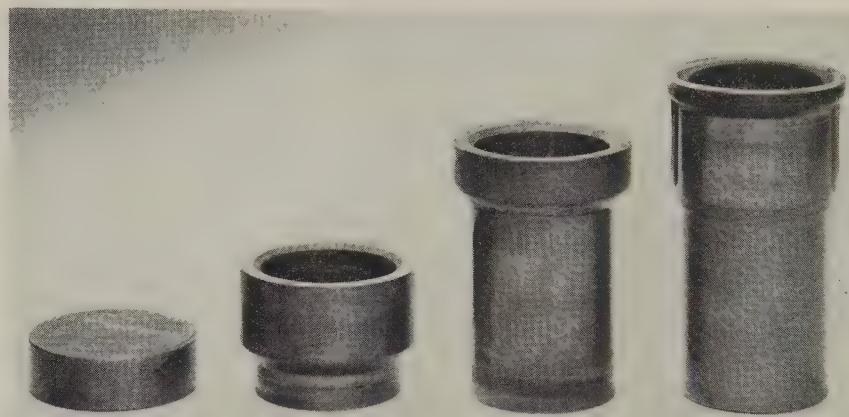
• **Paper Wipers**—The lintless paper wipers (made by Scott Paper Co., Chester, Pa.) were found to be safe for cleaning ribbons of precious metals used in the manufacture of the various dental and electronic products.

The uniformity of size and the nubby textured surface of the paper wipers are advantageous for cleaning milling machines where orthodontic bracket material is slotted.

The embossed paper used for the wipers has thousands of tiny reservoirs for soaking and holding oil. The special paper also has high cross-directional stretch which gives it strength in all directions to resist tearing. That property permits vigorous use of the wipers over rough and irregular surfaces.

Cases of Scott wipers are kept in the stockroom at Wilkinson and individual boxes are distributed to employees as they are needed.

## Impact Extrusion Cold Forms Chrome-Molybdenum Steel



**A 6 in. can is made in three steps, starting with 1-1/16 in. slug. The cold forging process is said to be competitive with other production methods. Eight advantages are cited**

ALLOY STEEL is being impact extruded (cold forged) by Matthews Mfg. Co., Hawthorne, Calif. Pressures are three times the maximum specified for a tool steel grade. Such performance depends a lot on tool design, heat treating, machining, and lubricants.

A typical application is a closed end steel can, which is made for the Navy.

• **Process**—Impact extrusion offers these advantages:

1. Close tolerances.
2. Inexpensive tooling changes.
3. Part strength.
4. Complex configurations.
5. Good surface finish.
6. Economy.
7. High volume runs.
8. Design freedom.

• **Tool Design**—Different punch and die assemblies were designed for the three operations. AISI D2 tool steel from Bethlehem Pacific Coast Steel Corp., Los Angeles, was selected. Generous radiiuses were used on corners. After machining, the die assemblies were heated, air quenched, and double drawn. After grinding, the finished tools were again drawn and air quenched.

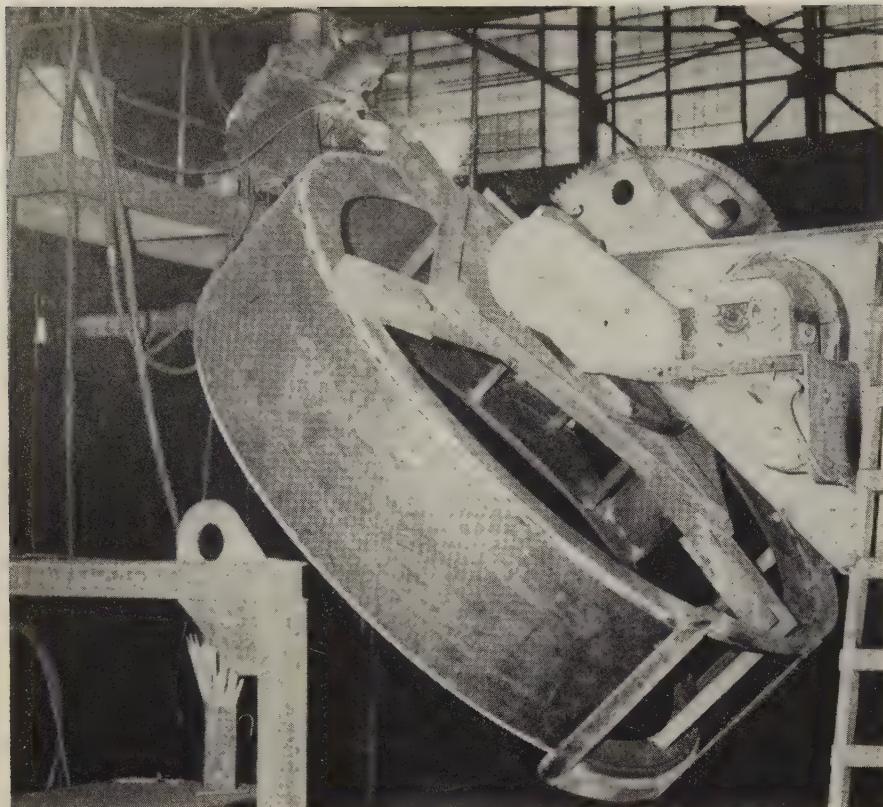
A Rockwell C hardness of 60-62 was obtained. Compressive yield strength was about 20 per cent above normal (about 600,000 psi).

Matthews believes the tool steel can form 150,000 to 200,000 pieces. A tool used to produce a shape by hot working was estimated to form only 5000 pieces.

• **Forming**—Slugs in 1 5/16 in. sections were cut from 3 5/16 in. 4130 chrome-molybdenum steel rounds, then softened with a normal pack anneal. At about 150 tons per sq in., the steel flowed upward, in a backward type extrusion through the space between the punch and die. Mechanical stresses were relieved by drawing after each forming operation.

• **Lubrication**—After each operation, the part is pickled in sulfuric acid, rinsed in cold water, and coated with zinc phosphate heated to about 135° F. The zinc phosphate is neutralized in a solution at 130° F, and the part is lubricated with a soapy substance at 160° F. Zinc phosphate is a reactive type lubricant that adheres to steel.

The completed can has a yield strength of 120,000 psi.



**Nearly completed fan casing is held upside down on a positioner which allows operator to work downhand. Platform, which can be raised or lowered, holds operator and equipment**

## Semiautomatic Welder Boosts Production

SEMIAUTOMATIC welding cut production time 25 per cent for Combustion Engineering Co., St. Louis.

The job: Heavy fan casings for powerplant blowers. (They provide the blast which burns powdered coal in high pressure boilers.)

The material:  $\frac{1}{2}$  in. to  $1\frac{1}{2}$  in. mild steel plates.

Other advantages, says Combustion Engineering: A 25 per cent increase in the amount of metal deposited per pound of wire and greatly reduced postweld cleaning time because of lower spatter.

• **Operation**—Casings are assembled, tackwelded, and mounted on a positioner. The operator and welding equipment are on a platform—it can be raised or lowered. Benefit: The operator can make

all welds in the flat position for greater efficiency.

Combustion Engineering uses 3/32 in. wire in a Unionarc welding machine set at 400 amperes of direct current (reverse polarity).

Two passes are usually adequate to make an outside corner weld.

• **System**—Unionarc, made by Linde Co., a division of Union Carbide Corp., New York, is one of several semiautomatic systems which have been showing big gains in some areas of joining. It uses a continuously fed wire electrode which is magnetically coated with flux as it is fed into the hand-held nozzle.  $\text{CO}_2$  is used for shielding.

The torch can be used in all welding positions and in many cases travels three or four times faster than conventional covered electrodes.

## Mandrel Drawn Tubing Lops 75-80% Off Cost

IF YOU can substitute mandrel drawn steel tubing for honed tubing, your savings may match the 75 to 80 per cent cost reduction reported by Gabriel Co., Cleveland, which uses 2 million ft monthly.

Gabriel makes direct acting automotive shock absorbers. Originally, honed tubing was the only type that could meet specifications. It is used as the innermost cylinder and contains a piston and hydraulic fluid. Piston compression and rebound strokes compensate for road variations and are cushioned by the hydraulic fluid. The inside walls of the cylinder must have a mirror smooth surface. Blemishes or rough spots can damage the piston and rubber seal.

Another requirement: Close diameter tolerances have to be maintained under operational stresses. If diameter variations develop, binding or loosening of the piston will render the shock absorber useless.

Gabriel now uses a special, smooth, mandrel drawn tubing made in 15 ft lengths by Jones & Laughlin Steel Corp., Pittsburgh. Inside diameters range from 0.995 to 1.001 in. Outside diameters range from 1.082 to 1.085 in. As received, lengths are cut into 7 to 11 in. sections. Ends are deburred.

## Floor Grating Aids Safety, Maintenance, Drainage

Electroforged floor grating provides manifold benefits for Dow Chemical Co., Midland, Mich. Sprinkler coverage is extended through floors, fewer sprinkler nozzles are required, and safety and maintenance problems are eased.

Several hundred thousand square feet of 1 x 3/16 in. grating (made by Blaw-Knox Co., Pittsburgh) provide sure footing.

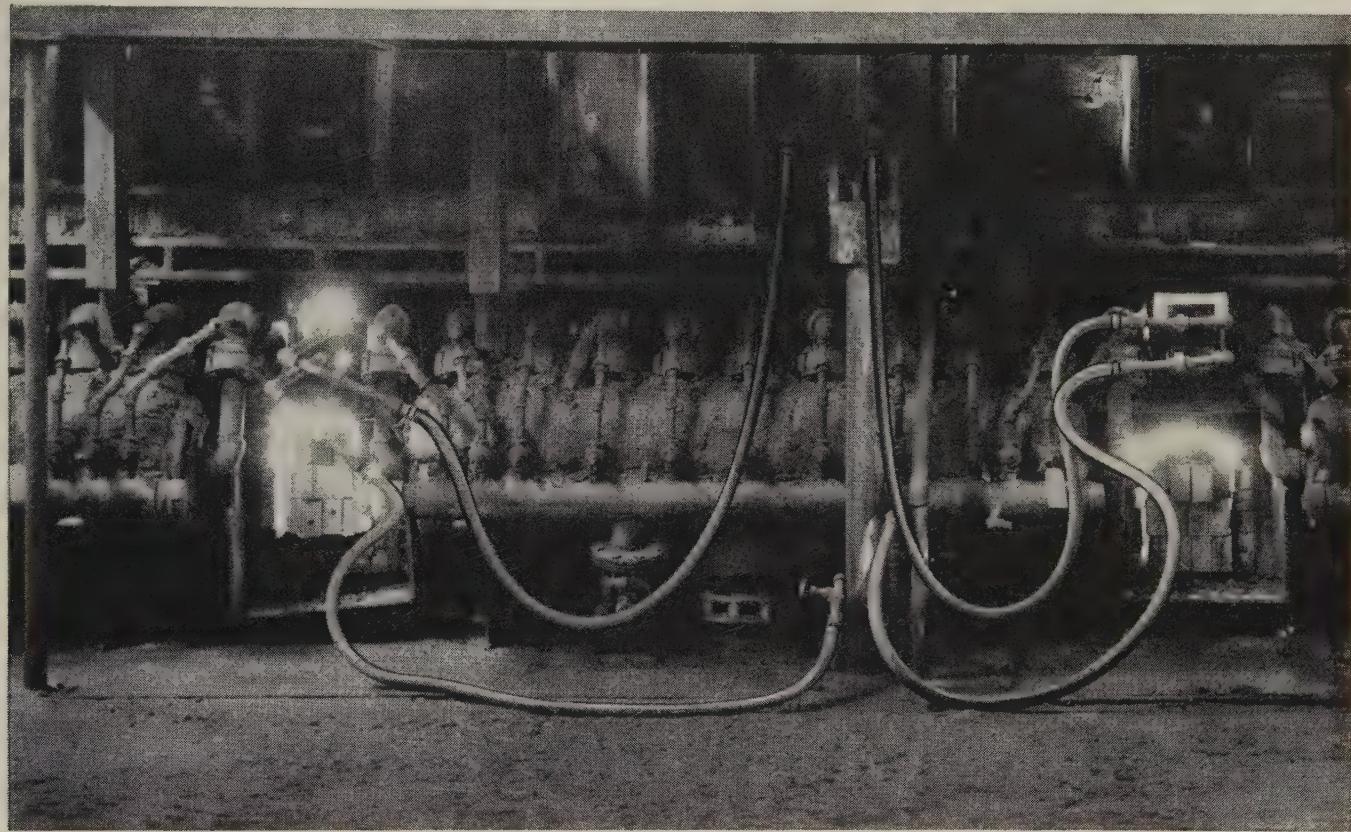
Snow and ice do not accumulate and drainage problems are simplified. Because fewer drainage lines are needed, construction costs for Dow's outdoor processing stations have been reduced.

Electroforging has also eliminated corrosive attack of joints. Almost 600 kinds of chemicals are processed at Midland.



PEERLESS WATER HOSE

# BIG STEEL MILL DEPENDS on U. S. PEERLESS WATER HOSE to prevent pipe skid burn



In the Fretz-Moon furnace of this Kaiser Steel Mill in Fontana, Calif., one length of U.S. Peerless® Water Hose ("the hose with the good brown cover") carries cold water to the pipe skids, another length carries the return hot water—up to 200° F. If the hose should fail or kink, the pipe skids would burn up and costly repairs and downtime would follow.

Kaiser Steel depends on Peerless to safeguard valuable

skids and keep its pipe mill in operation. U. S. Peerless is part of the complete line of U. S. Rubber's industrial hose, engineered for use and abuse.

• • •

**When you think of rubber, think of your "U. S." Distributor. He's your best source of on-the-spot technical aid, quick delivery and quality industrial rubber products.**



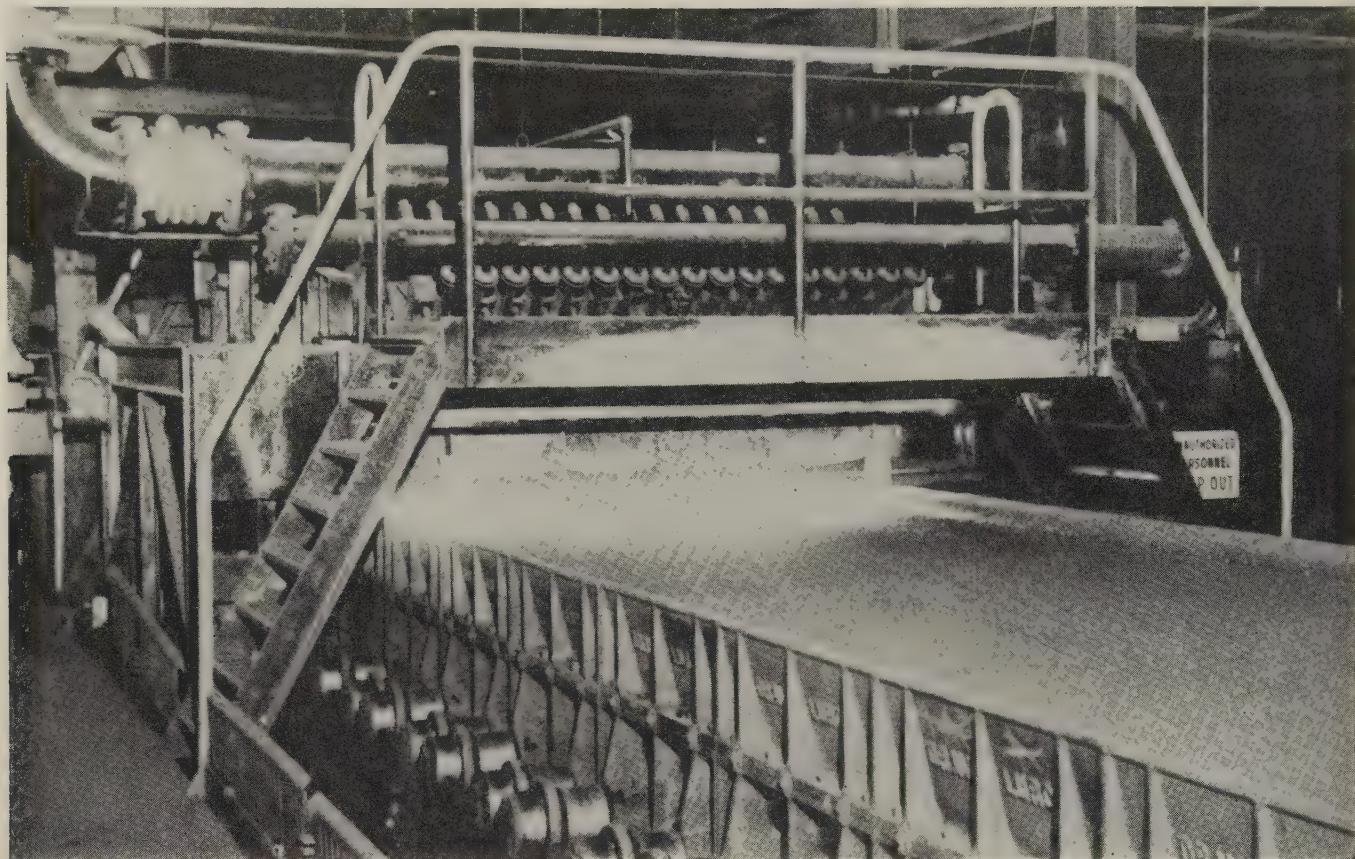
Mechanical Goods Division

# United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y.

In Canada: Dominion Rubber Company, Ltd.



Ore fines and flue dust, with crushed limestone as a flux and coke breeze as a fuel, are agglomerated under intense heat on this 111 ft sinter strand. A gas furnace ignites the coke; 13 windboxes help fuse the mix

## McLouth Joins Trend: Builds Self-Fluxing Sinter Plant

The facility turns out 2100 tons a day. Limestone is incorporated in the mix, meaning it doesn't have to be charged separately. Unit also reclaims flue dust

STEELMAKERS are intrigued with self-fluxing sinter as a blast furnace feed. (It eliminates the need to charge limestone separately.) Several companies are building plants to produce the material.

One of the newer plants, put into operation recently at the Trenton (Mich.) Works of McLouth Steel Corp., turns out 2100 tons of self-fluxing sinter daily. It was built by Dravo Corp., Pittsburgh, under a licensing agreement with the Lurgi Co., Germany.

Designed to agglomerate Lake Superior ore fines which are too small to be fed into blast furnaces, it will also reclaim a five year accumulation of flue dust (about 300,000 tons) with a high iron content.

- **The Furnace** — The continuous strand sinter machine is equipped with a hearth layer system and a roll feeder for the sinter mix. Also included: A pallet tipping wheel, an adjustable drive train, and a sinter breaker.

The ignition furnace is welded steel with a rammed refractory lining. A row of gas burners provides up to 120,000 Btu per hour for each ton of sinter produced.

A water cooled jacket protects the bottom of the unit; water cooled, adjustable gates prevent leakage at the ends.

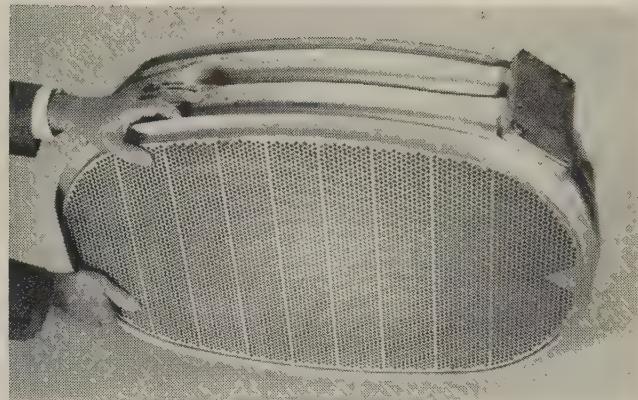
Mounted on a structural steel carriage, with wheels that run on tracks parallel to the strand, the furnace is easily accessible for repair or replacement.

- **Materials Processed** — Ore from the storage yard is delivered to three bins, which feed it to a 60 ton surge hopper by conveyor. It's then carried by a vibrating feeder to a vibrating screen that removes ore over  $\frac{3}{8}$  in. for direct feeding to blast furnaces. Smaller particles are carried to storage bins that feed the sinter mix belt.

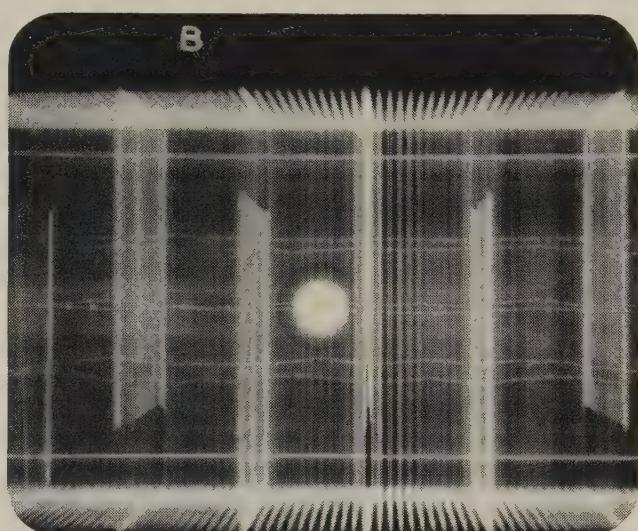
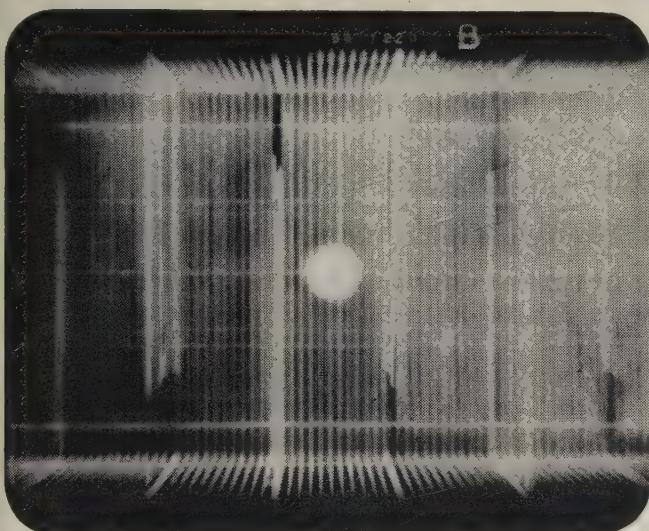
Coke, flue dust, crushed limestone, and mill scale are transferred from railroad cars to a surge bin,



An oil cooler as it comes from the airplane engine. Radiograph below shows accumulations of sludge and dirt on the tubes.



After cleaning, the oil cooler is ready to return to its job. Radiograph below shows dirt gone and passages unrestricted.



## To keep an engine's bloodstream clean

**O**IL COOLERS are vital to today's aircraft engines. At overhaul time they must go back on the engine clean as new. No minute particles of carbon or metal can remain to be a threat to the renewed engine. Cleaning them has become a specialty with SMS Instrument and Accessories Corp. of Idlewild Airport, N. Y. C.

To show that each cooler they clean

is free of debris, it is sent to Industrial X-ray Incorporated, New Hyde Park, New York, to be radiographed. And when the cooler goes back to its job, its x-ray certificate of cleanliness goes with it.

In such inspections of assemblies, in quality control, in nondestructive testing, radiography provides a means of "seeing" internal conditions and

also a lasting record of what is seen.

Producers of castings, and makers of welded products, find radiography a means of expanding their business and making sure only high-quality work is delivered.

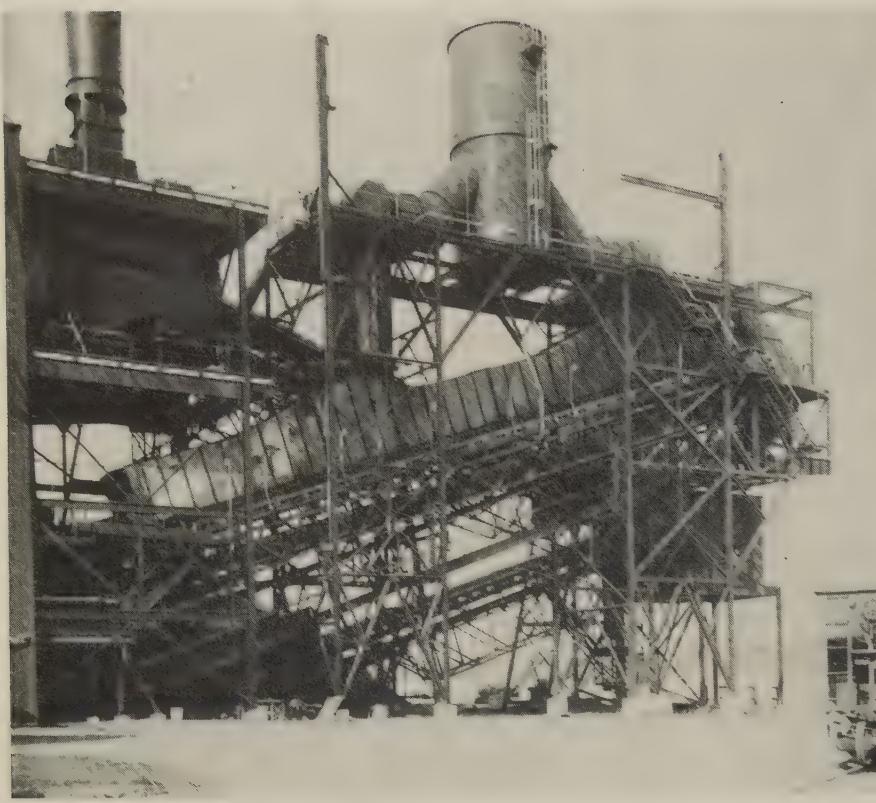
Would you like to learn how it could help you? Contact your Kodak x-ray dealer or the Kodak Technical Representative to talk it over.

**X-ray Division . . . EASTMAN KODAK COMPANY . . . Rochester 4, N. Y.**

### Read what Kodak Industrial X-ray Film, Type AA, does for you:

- Speeds up radiographic examinations.
- Gives high subject contrast, increased detail and easy readability at all energy ranges.
- Provides excellent uniformity.
- Reduces the possibility of pressure desensitization under shop conditions.

**Kodak**  
TRADE MARK



**Straight line, induced draft cooler reduces temperature of sinter from 1450 to 235° F. Material can then be handled by rubber belt conveyors**

then fed to a 1 in. vibrating screen. Material over 1 in. is discarded; smaller particles are stored in the sinter plant feed bins.

Coke breeze under 1 in. is taken to an air blown rod mill, where it's crushed to less than  $\frac{1}{8}$  in. It's then stored for addition to the sinter mix.

Table feeders, under the storage bins, carry materials to the sinter mix belt. Co-ordinated scales on the conveyors indicate the weight of ferrous materials delivered to the belt and add the right amount of coke to the mix.

Another conveyor scale indicates weight of the sinter mix after water has been added in a pug mill. Material is then pelletized and stored in surge bins that feed the sinter strand. The feed rate is correlated with machine speed.

Sintered material  $\frac{3}{8}$  to  $\frac{3}{4}$  in. in diameter, placed on the grate bars of the sinter machine, forms a bed 1 to  $1\frac{1}{2}$  in. deep for the pellets.

**• Grading and Cooling**—At the end of the sinter strand, a breaker reduces the product to chunks 6 in. or less in diameter. A vibrating screen removes sinter under  $\frac{3}{8}$  in.

It's stored and later returned to the sinter mix belt.

Sinter  $\frac{3}{8}$  to 6 in. in diameter is transferred by a vibrating feeder to a straight line cooler, the first of its kind installed by Dravo in the U. S. Equipped with two large, axial flow fans, it reduces the temperature of the sinter from 1450 to 235° F. The material can then be handled by rubber belt conveyors.

After cooling, sintered material passes over a series of screens. Pieces over  $\frac{3}{4}$  in. are used as blast furnace feed.

Part of the  $\frac{3}{8}$  to  $\frac{3}{4}$  in. sinter is used as a hearth layer, and the rest is used in the blast furnace charge. Material under  $\frac{3}{8}$  in. is returned to the sinter mix belt.

**• Others Installed**—Earlier, Dravo built a sinter plant at Ashland, Ky., for Armco Steel Corp. (See STEEL, Nov. 3, 1958, p. 78.) It produces 2400 tons of sinter daily.

Two plants, said to be the largest in the world, are being built by Dravo for United States Steel Corp., at Saxonburg, Pa., and Gary, Ind. Each will make 15,000 tons of sinter a day.

## **Strong Polyvinyl Film Resists Corrosion, Weather**

A new polyvinyl fluoride film (Type R) with outstanding weathering characteristics, chemical resistance, and mechanical strength has been made available by E. I. du Pont de Nemours & Co. Inc., Wilmington, Del. Early laboratory samples of unsupported film have not embrittled or discolored after ten years' exposure. Predicted life as a film finish on laminates is double that of unsupported film.

Excellent resistance is shown against 10 per cent sulfuric acid, 10 per cent sodium hydroxide, and carbon tetrachloride. The nonplasticized transparent film exhibits high tensile strength and flex life. Usable temperature span ranges from -100 to 250° F.

The dielectric constant is 7.5 at 68° F and 60 cycles. Dielectric strength and resistance to thermal degradation is high.

It can be vacuum metallized, thermoformed, and is postformable in laminations to plastics, metals, and other materials. Glossy and satin finished types are available.

Long outdoor life coupled with easy forming and fabrication make the film suitable for surfacing siding, roofing, and other building products.

## **Glass, Plastics Reduce Missile Weight, Insulate**

New structures and materials for missile nose and exit cones, fuselages, and other space vehicle structures are said to provide a 20 to 25 per cent weight reduction, compared with conventional materials. The experimental units are fabricated from a blending of glass and plastics, says Hughes Aircraft Co., Culver City, Calif.

The nonmetallic materials have successfully withstood loading tests at high temperatures. Low rate of heat transfer (lower than metals) provides thermal insulation.

Other advantages: Corrosion resistance, high strength to weight ratio, and natural vibration damping (better than common structural materials).



## When the Blast-Off Is the Pay-Off . . .

WHEN your critical project goes on the line it is a virtual prisoner of its components. Whether your's is a missile, or a more utilitarian product, failure of just one part means failure of the whole project.

Seamless and welded stainless steel tubing backed by Wall Tube's depth of experience in metals, manufacturing and testing will free you from failure by this component, whatever its application.

Wall Tube specializes in the manufacture of small-diameter tubing for the most demanding applications. Its quality control lab is equipped to do the most exhaustive testing. Its Technical Sales Representatives are eager to assist in the selection of your metal requirements. Modern facilities enable delivery of the job as it was promised.

If you haven't drawn on Wall Tube for your tubing needs, you've been denying yourself of a capable, dependable and economical source. We invite your inquiry.

### RANGE OF MANUFACTURE:

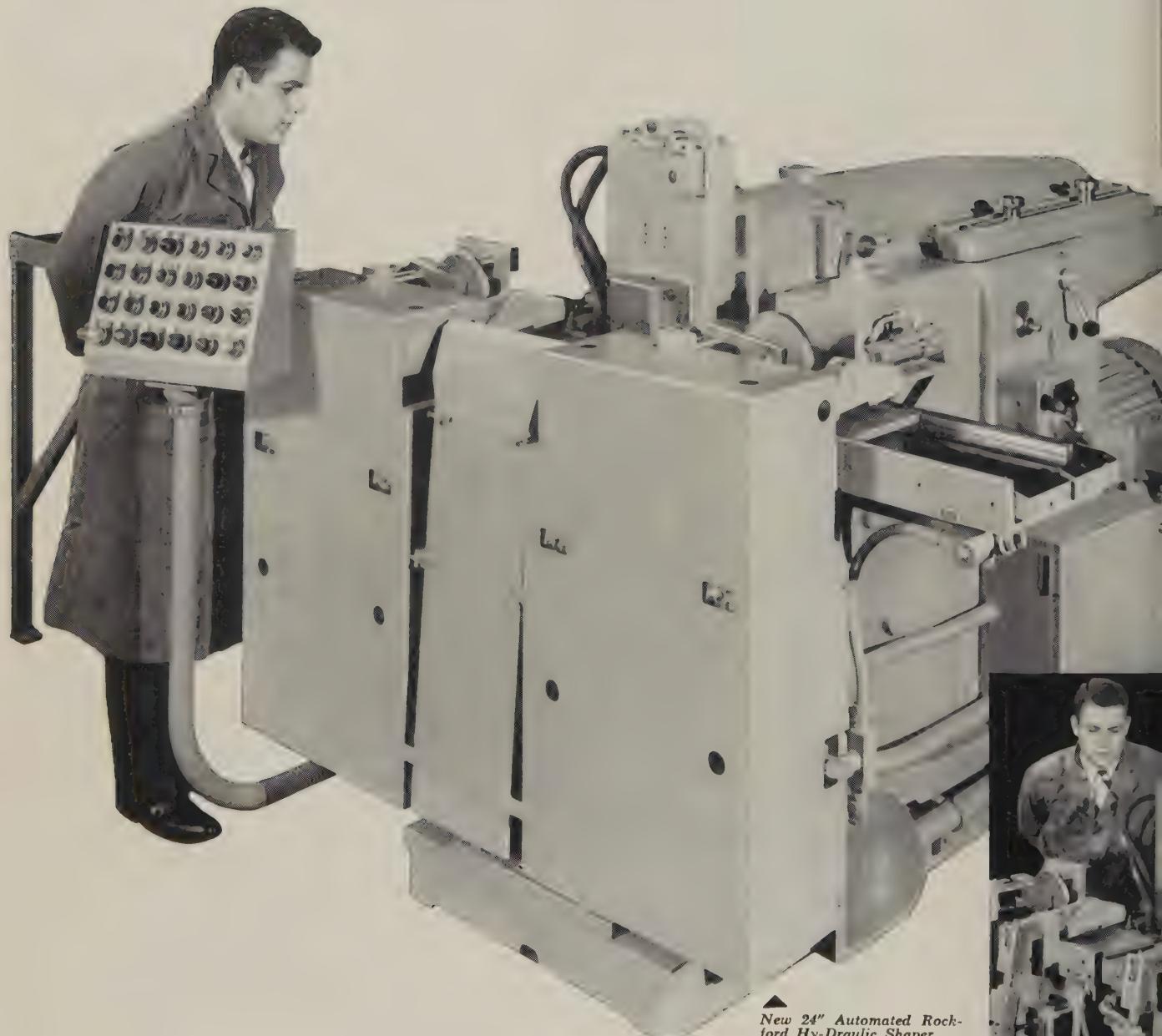
**Welded and Cold Drawn**  
1 1/8 OD to 3/32 OD  
.083 to .008 walls

**Seamless**  
5/8 OD to 3/32 OD  
.049 to .008 walls

*In Tubing for  
the Space Age  
... this name  
counts . . .*

**WALL TUBE  
AND METAL  
PRODUCTS CO.**

*Now... automation comes to shaping!*



*New 24" Automated Rockford Hy-Draulic Shaper.*

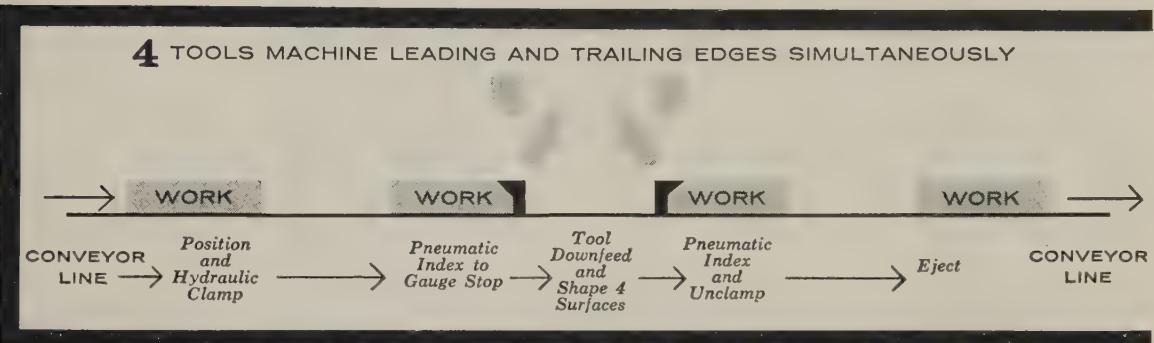
*View with covers removed,  
showing index and transfer  
units.*



# COMPLETE AUTOMATIC CYCLING ON ROCKFORD

## HY-DRAULIC SHAPER PRODUCES CONTINUOUS FLOW OF PARTS FOR CONVEYOR-LINE PRODUCTION . . .

4 TOOLS MACHINE LEADING AND TRAILING EDGES SIMULTANEOUSLY

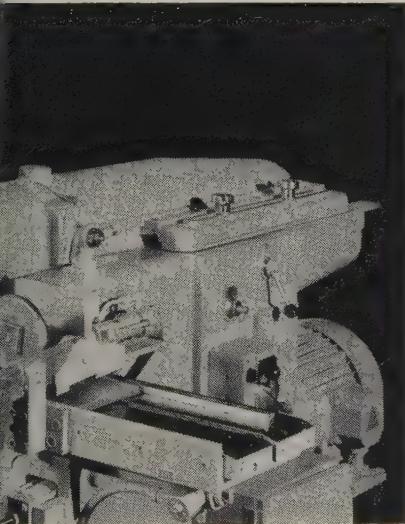


Believed to be the first automatic shaper built, this standard 24" shaper with special tool head and cross-rail has been adapted to conveyor-line operation by arranging completely automatic cycling, including loading and unloading.

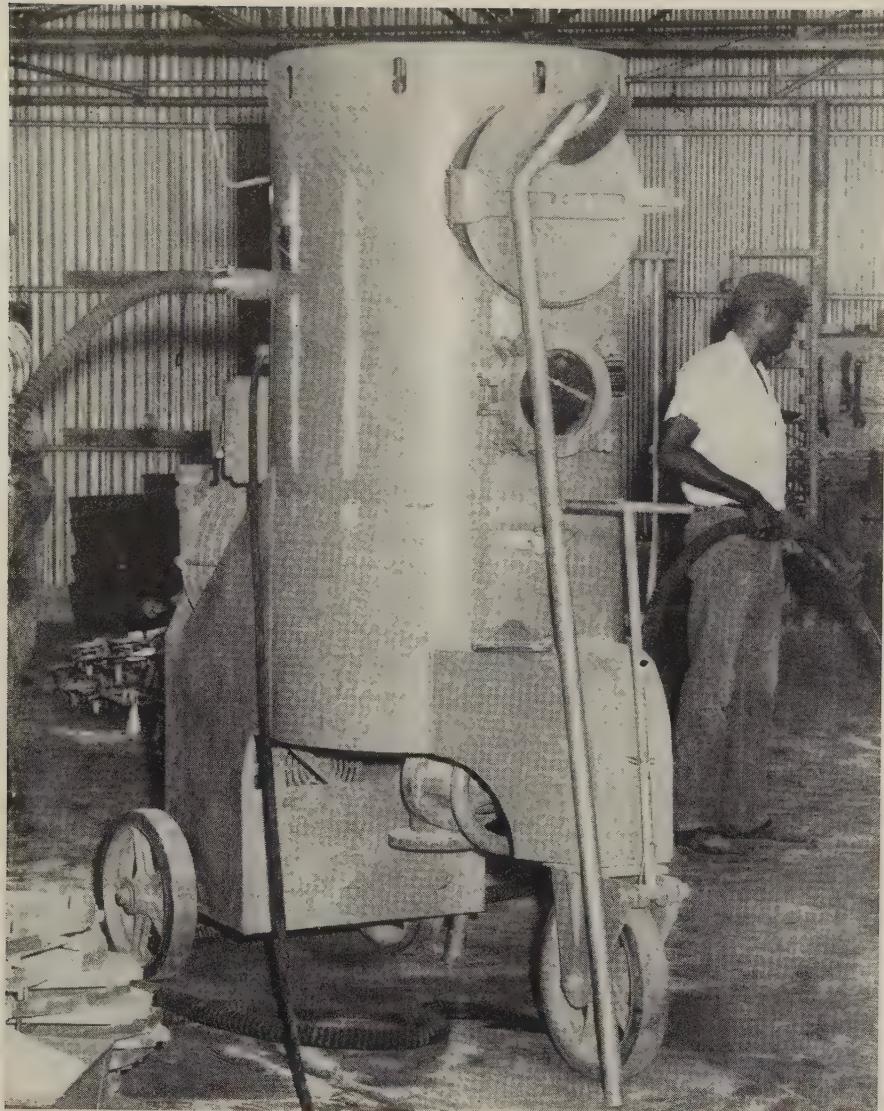
With this new method, many types of flat plates may be machined accurately and efficiently at high production rates, saving costly cutting tools and extra fixturing expense.

Four standard high speed steel tool bits with identical grinds are used to finish one vertical and one angular surface of each of 2 pieces simultaneously, as shown in diagrammatic sketch of the automatic cycle. The machine features pneumatic index, hydraulic positioning and clamping, and positive mechanical feed. Operation is continuous until machine is stopped by operator, or automatic safety devices reject the cycle sequence.

This type of automatic machining has many variations, using Rockford Hy-Draulic Shapers. If you have high output requirements for work which lends itself to this type of machining, send us blueprints for estimates and recommendations.



**ROCKFORD MACHINE TOOL CO.**  
2500 KISHWAUKEE STREET • ROCKFORD, ILLINOIS



This wet vacuum sweeper scoops up flammable dust and chips and mixes them in 50 gallons of water. Sludge is removed daily

## Wet Vacuum System Ends Flammable Dust Hazard

Magnesium casting producer reports a 25 per cent cut in cleanup manpower and a 33 per cent production increase after adoption of this equipment

ARE YOU faced with a flammable metal dust problem?

One solution: A wet vacuum system for dust and chip collection. It cut cleanup manpower costs 25 per cent and increased production 33 per cent for a magnesium and aluminum aircraft casting maker.

- **Case History**—Dust from magnesium grinding operations presented a persistent hazard at Arlington Texas Industries Inc.'s plant at Arlington, Tex. One spark could initiate a chain reaction fire in the finely divided material. Shopmen were alerted, but cleanup methods

using air vents, brushes, and shovels were ineffective.

One disastrous fire caused more than \$100,000 damage. Following a second fire, an investigation was started.

Housekeeping methods were a production handicap. Machine stoppage for cleanup reduced output.

To lick the problem, Arlington tried a 5 hp, portable vacuum cleaner (Wetco-Vac) made by Air Appliance Div., U. S. Hoffman Machinery Corp., New York. Results: Labor savings, increased capacity, and no more fires. Night shifts are no longer necessary. Collateral benefits include less labor turnover and a cleaner, safer plant.

- **Equipment**—Staticproof hoses and nonferrous cleaning tools minimize sparking. Incoming dusts are thoroughly mixed into the unit's water tank. Motor, starting switch, and electrical connections comply with NEMA standards for use where explosive dust is present.

## New Technique Hot Rolls Titanium, Other Metals

A new fabrication technique hot rolls titanium, and other high strength metals. It was developed by Titanium Fabricators, Burbank, Calif. Rocket motor heads are typical products.

The hot spinning method reduces tooling costs by replacing normal deep drawing, forging, and cold shear spinning processes.

The parts are formed in one piece without welding. The head and case are continuous, and bosses can also be formed integrally with the heads. It means greater strength and material savings as high as 500 per cent for prototype parts, says the company.

Its hydraulic spinner deforms the metal by controlling heat and rate of forming and the amount of force used. This allows selection of the area least resistant to forming, while retaining the most desirable properties of metals when in the finished shape.

Diameters up to 120 in. can be economically made. Thickness is varied by moving the hydraulically controlled roller in and out as it passes different stations.

## Ductile Iron Slashes Cost Up to 30%, Hikes Output

Ductile iron reduced spool cost 20 to 30 per cent and improved production at John A. Roebling's Sons Co., Trenton, N. J. The 60-45-10 alloy is cast into spools with 5 and 9 $\frac{1}{8}$  in. diameters by T. B. Wood's Sons Co., Chambersburg, Pa.

Formerly, the 5 in. size was fabricated from high carbon (0.50 to 0.60 per cent) steel. Wire would snag in crevices where flanges join the spool barrel. This meant production delays, spool damage, and wire waste. Ductile iron, cast in one piece, ended snags.

The 9 $\frac{1}{8}$  in. spools were cast from malleable iron. The lower yield strength of malleable made the spools vulnerable to rough handling damage such as nicked tension grooves and bent flanges. These difficulties have been sharply reduced with the use of the tougher ductile iron alloy, which has an essentially ferrite structure. Tensile strength ranges between 60,000 and 80,000 psi.

## Rolling and Casting of Columbium Improved

Columbium mill technology has made a significant advance with the production of a 0.028 x 36 x 96 in. sheet. It was produced from a 9 in., 325 lb ingot melted by Universal-Cyclops Steel Corp., Bridgeville, Pa.

Another breakthrough: The casting of a 470 lb ingot of columbium containing 1 per cent zirconium. The alloy was melted from a 4 in. billet supplied by Wah Chang Corp., Albany, Oreg. The ingot is 8 in. in diameter, 36 in. long and will be remelted into a 12 in. diameter ingot for maximum purity and homogeneity. Corrosion resistance and low neutron cross section make it an ideal material for many nuclear parts. It is also being considered in the aircraft and missile industry for leading edges, nose cones, and skin material on supersonic vehicles.

Universal-Cyclops is developing commercial mill products of refractory and reactive metals and alloys for high temperature, high strength use in missile and nuclear industries.



This torque wrench is being checked on a Skidmore-Wilhelm calibrator. Wrench and calibrator reading should correspond

## Bolt Torque Testing Pays Quality Control Dividends

This addition to a truck manufacturer's assembly program is insurance against user complaints. Gasket and cylinder leaks have been prevented

CONTROLLED bolt torquing in your assembly process can make customers happier and keep up the reputation of your products.

- **Case History**—White Motor Co., Cleveland, adopted the method as insurance against such things as leaking gaskets and cylinders and gasket blowouts. The method also disclosed weaknesses in previous checking methods.

White made a study of all connections in its trucks. Using information from the Society of Automotive Engineers, it developed torque standards for every type of bolt and screw used. Required accuracy in torque ranges from 30 to 1000 ft-lb for components and assemblies of its vehicles.

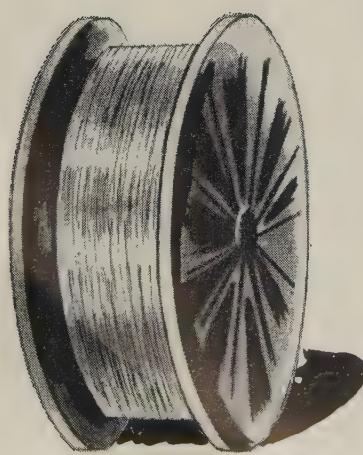
The next step was to hold the

torque limits within a close range on the assembly line. To assure that proper torque was delivered to bolts, a torque wrench calibrator (made by Skidmore-Wilhelm Mfg. Co., Cleveland) was made a part of the daily inspection schedule.

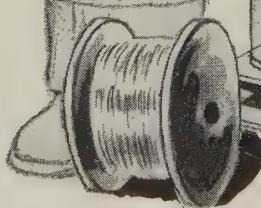
The calibrator is moved from one station to another—operations involved include several lines (engine assembly, rear axle and differential, and front axle), dynamometer testing, and rustproofing.

Testing takes only a few seconds. The wrench is fitted into the coupling on the calibrator; torque is applied; and developed torque is indicated on a gage. The reading should correspond with the setting or reading on the torque wrench. Results are turned in to the inspection department every day.

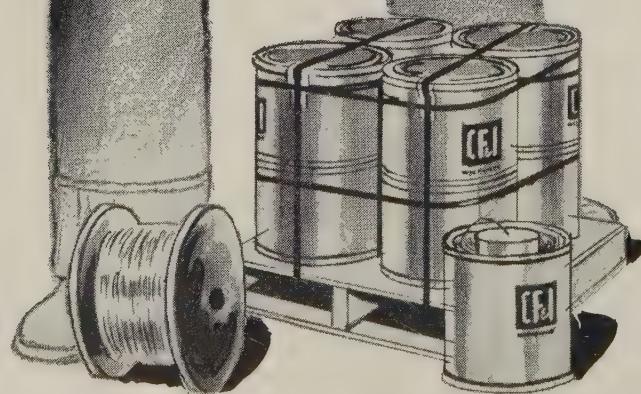
# CF & I



Reels  
(500-800 lbs. capacity)



Disposable Spools  
(5-70 lbs. capacity)



Fibre Drums  
(250-600 lbs. capacity)



Standard Coils, paper-wrapped,  
steel-strapped or wire-tied

# WIRE . . .

PACKAGED for  
YOUR PRODUCTION

The CF&I Image represents the strength and dependability of all CF&I steel products. And for CF&I Steel Wire, this symbol reflects top quality. CF&I is the leader in designing packaging to reduce our customers' costs.

This is important to you! When you buy CF&I Steel Wire, you cut production costs—save time and money—by specifying the package that works most economically for you. You can choose a CF&I wire package that gives you the following special benefits:

- *reduced downtime through extra long lengths of wire*
- *simplified inventory control*
- *fast, economical in-plant handling*
- *continued cleanliness of the wire*

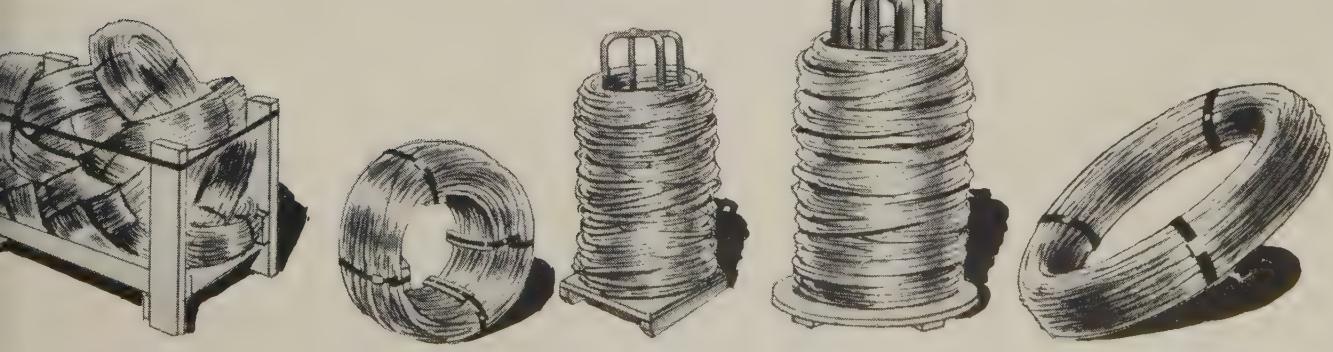
CF&I Steel Wire is available in a wide variety of gages and finishes. Whatever your wire requirements, be sure to order from CF&I. All orders—from a coil to a carload—will arrive at your plant packaged for your production. Let our nearest sales office know your requirements.

## CF&I-WICKWIRE WIRE THE COLORADO FUEL AND IRON CORPORATION

*In the West: THE COLORADO FUEL AND IRON CORPORATION*—Albuquerque • Amarillo • Billings • Boise • Butte  
Denver • El Paso • Ft. Worth • Houston • Kansas City • Lincoln • Los Angeles • Oakland • Oklahoma City • Phoenix  
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*In the East: WICKWIRE SPENCER STEEL DIVISION*—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans  
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CF&I OFFICE IN CANADA: Montreal  
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Steel-strapped  
Wooden Racks

Shaped Coils  
(1500-2500 lbs. capacity)

Stem-paks  
(500-700 lbs. capacity)

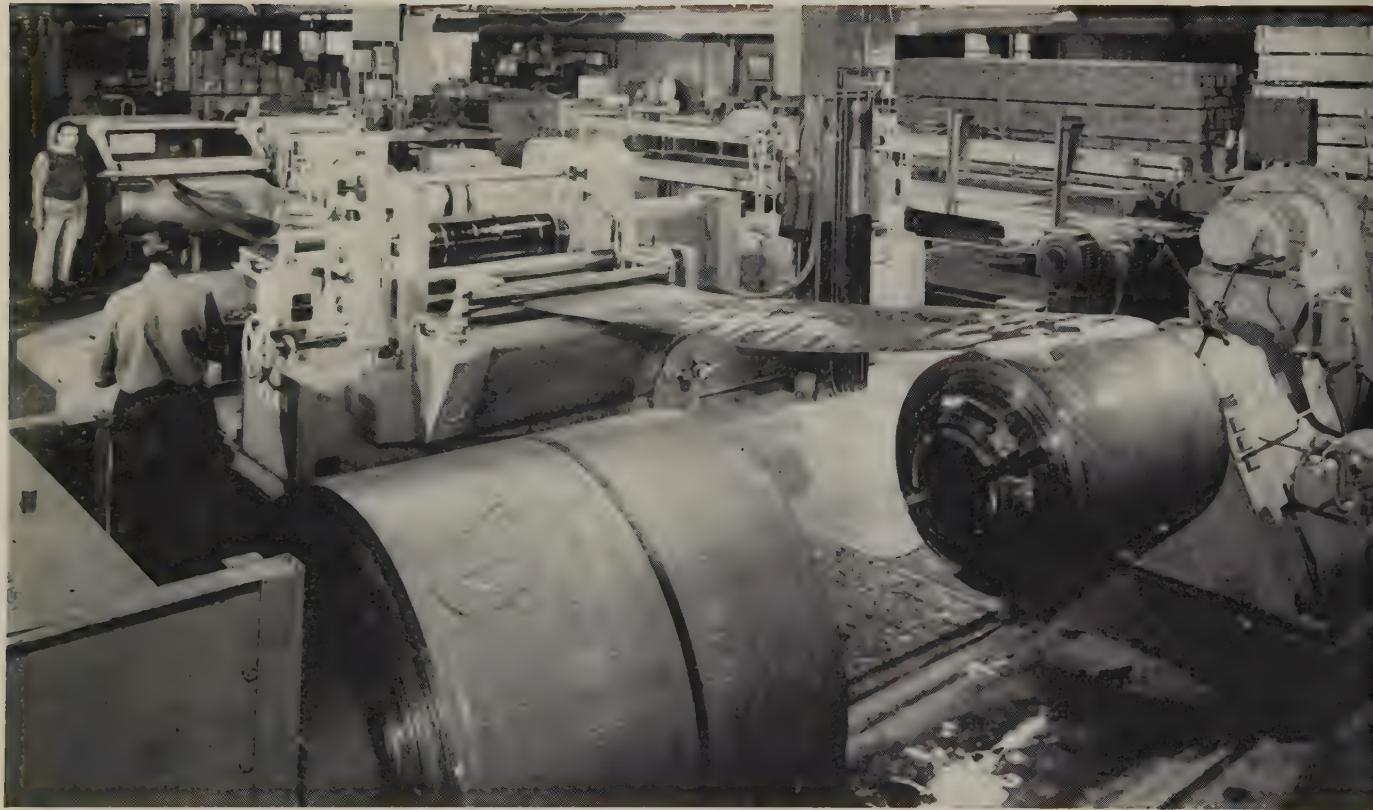
Returnable Spiders  
(2000-3000 lbs. capacity)

Steel-strapped Coils  
(100-600 lbs. capacity)

# Coil Processing Lines

## Cut Material, Labor Costs

Manufacturer of metal furniture does its own slitting and shearing to size. Result: Saving of 5 per cent in steel cost. Labor is eliminated in handling and resquaring of sheets



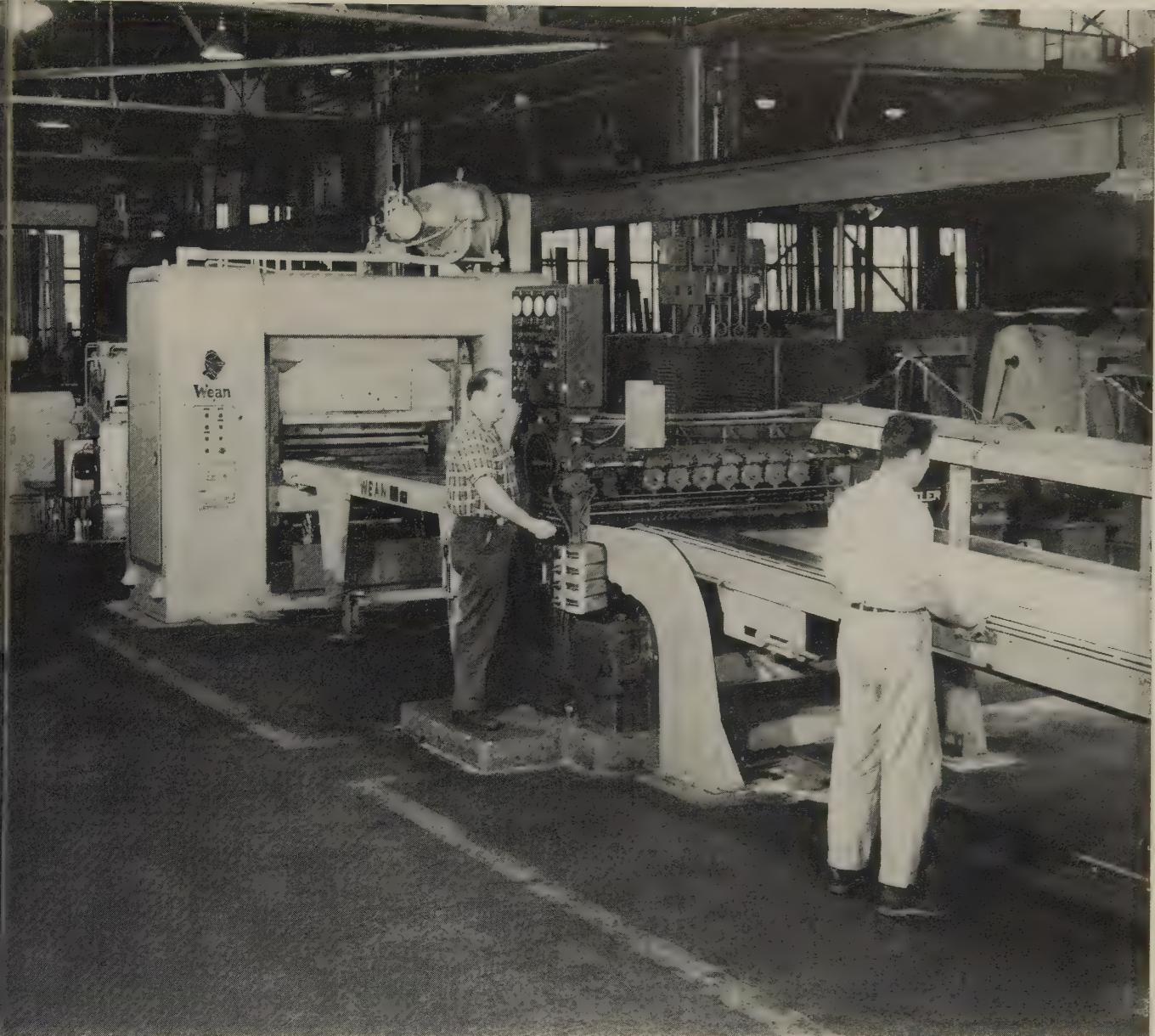
Slitting line consists of uncoiler, pinch rolls, slitter, scrap chopper, and recoiler

A 5 PER CENT saving in steel costs resulting from the utilization of a new coil processing system at General Fireproofing Co., Youngstown, will pay for the equipment in less than a year.

The manufacturer of metal busi-

ness furniture feels that using the equipment to its capacity and including savings in handling and other labor costs may eventually provide total operating savings of up to 10 per cent a year over present costs.

- **Handles Major Volume**—The coil processing system consists primarily of a 48 in. slitting line and a 72 in. flying press shearing and blanking line. Wean Equipment Corp., Cleveland, built the two lines which take care of 95 per cent of the



Shearing line has uncoiler, flying press, leveler, inspection table, and stacker

plant's total steel needs.

After slitting, the strip is recoiled and moved by overhead crane to the uncoiler on the press line. It is cut to length on the press, then goes through a Voss leveler to an inspection table. It is stacked automatically. Cut lengths are trucked to the processing area.

• **Minimizes Handling**—The new press line saves additional money by eliminating a lot of handling. The company used to buy steel in sheet form (sizes from 24 x 112 in. to 45 x 144 in.). All of the steel had to be resquared, and about 80 per cent of it stretcher leveled.

Much steel was wasted in shear-

ing, since odd lengths were left over. That problem is greatly reduced when coils are used.

• **Adds Flexibility**—General Fireproofing gained another important asset when it installed the new slitting line: It can slit the coils to whatever widths are needed. (Specifications in metal furniture manufacture change frequently.)

At a later date, shearing and blanking in one operation may be done on the Wean flying press. By equipping the press with dies which shape individual pieces in a single stroke while the strip is being cut, an intermediate stage can be eliminated.

• **More Savings Possible**—Engineers at the Youngstown plant emphasize that the 5 per cent saving in steel costs is conservative. It is based on use of strip widths between 23 15/16 and 35 15/16. If widths from 36 to 48 in. are found to be practical, additional savings will be realized.

The company also is studying a proposal to process aluminum coils on the same equipment. That would save an additional 5 per cent on the cost of that material.

Management at General Fireproofing feels it may eventually be more economical to have its Youngstown plant also process coils for its plants in other cities.

# **Atlas Steels' 26" 2-high reversing blooming mill speeds production under the **BIRDSBORO** trademark**

And that trademark has come to mean quite a lot to steel producers in the U.S., Canada, Europe and other points on the globe. The strength and ruggedness demanded by the steel industry are blended with the advanced thinking and modern design ideas of the BIRDSBORO engineers. The result is

productive and profitable mill machinery with a long, useful service life. The BIRDSBORO representative in your area can cite specifics. You'll find them very interesting. *Sales Department, Engineering Department and Plant: Birdsboro, Pa., District Office: Pittsburgh, Pa.*

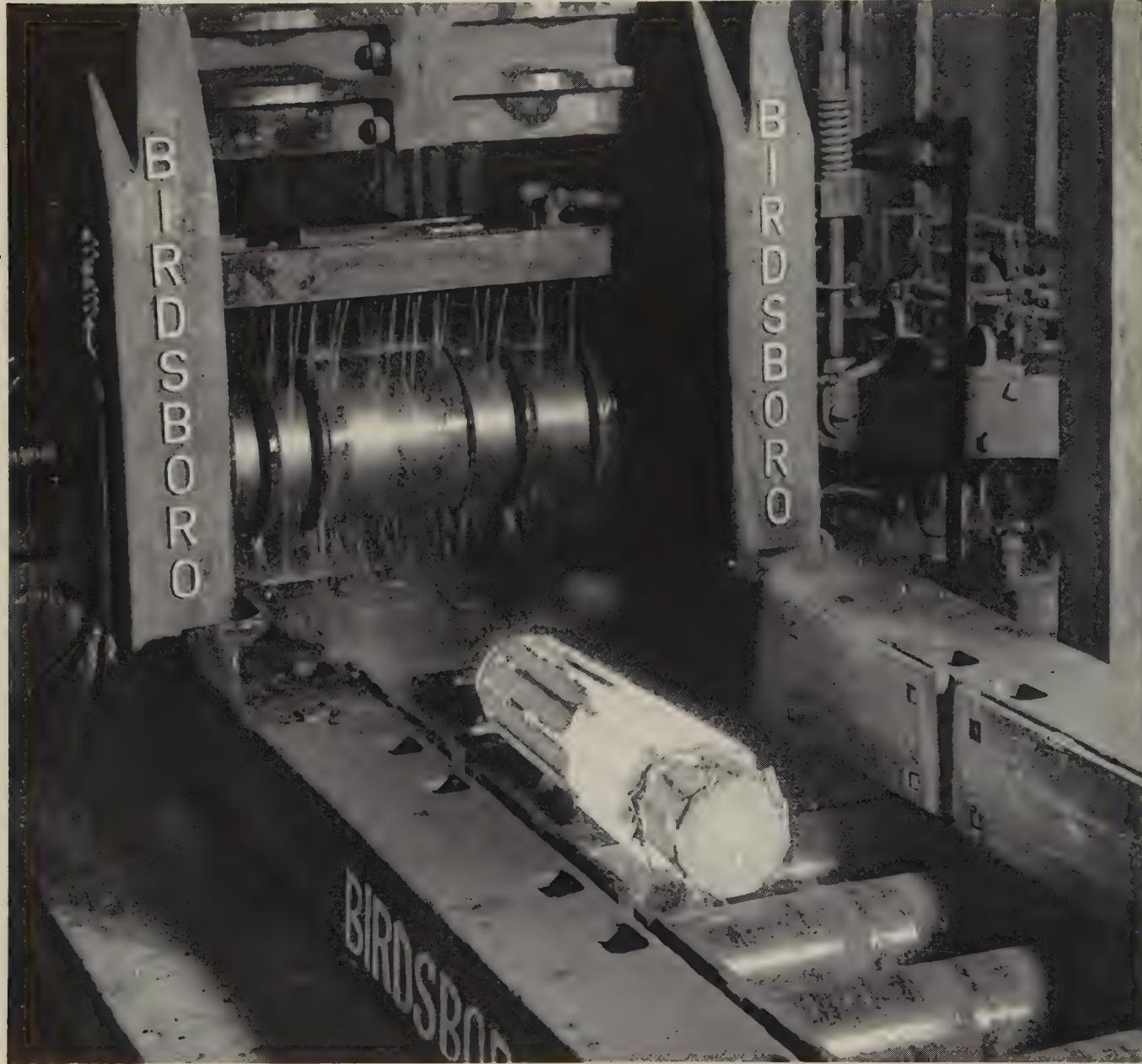


Photo Courtesy Atlas Steels Limited

MM-74- 9

## **BIRDSBORO** STEEL FOUNDRY AND MACHINE CO.

STEEL MILL MACHINERY • HYDRAULIC PRESSES • CRUSHING MACHINERY • SPECIAL MACHINERY •  
STEEL CASTINGS • Weldments "CAST-WELD" Design • ROLLS: Steel, Alloy Iron, Alloy Steel

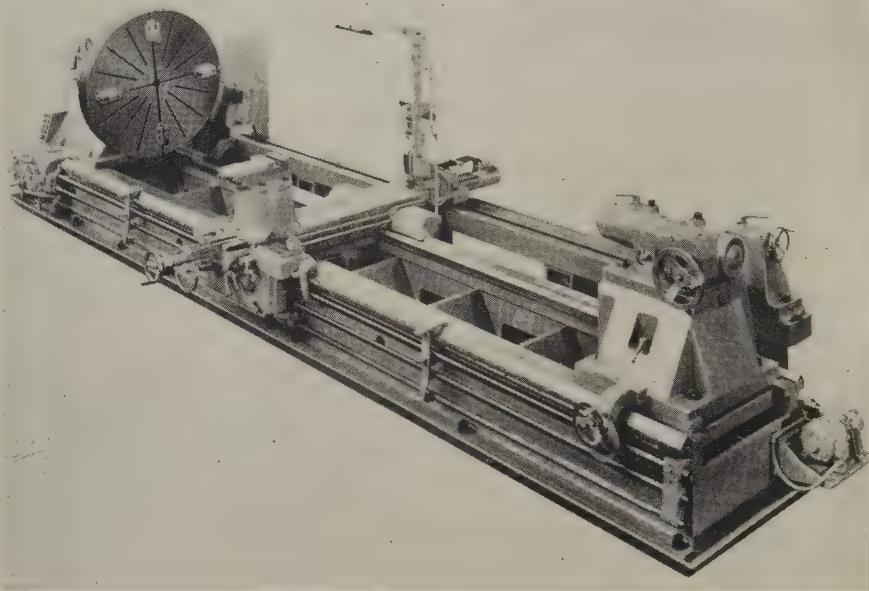
# Lathe Machines Large Work with Precision

FABRICATORS of large parts for the rocket, missile, aircraft, and other industries can fulfill precision machining requirements with the Space-Master series of lathes.

The machines are available in swings up to 72 in. and center distances up to 50 ft. They can be purchased with or without the Sidney fluid tracer which permits use of flat or round templates. The tracer can be equipped with periscope mirrors, permitting observation of tracer and template from the front of the machine even with large diameter work in the lathe.

One of the features of the lathe series is a 16 spindle speed headstock equipped with lapped herringbone gears. The manufacturer says the herringbone gearing provides smoother operation, greater tooth contact, balanced gear loads, and longer gear life.

An important improvement over conventional lathe beds is the use of a separate rack for the tailstock



pawl. All such parts as the tailstock base, carriage, bottom slide on the carriage, swivel on the bottom slide, and the top slide on the swivel, have unusually large support areas

to prevent deflection.

Provision is made for rapid approach and withdrawal of tools. For more information write Sidney Machine Tool Co., Sidney, Ohio.

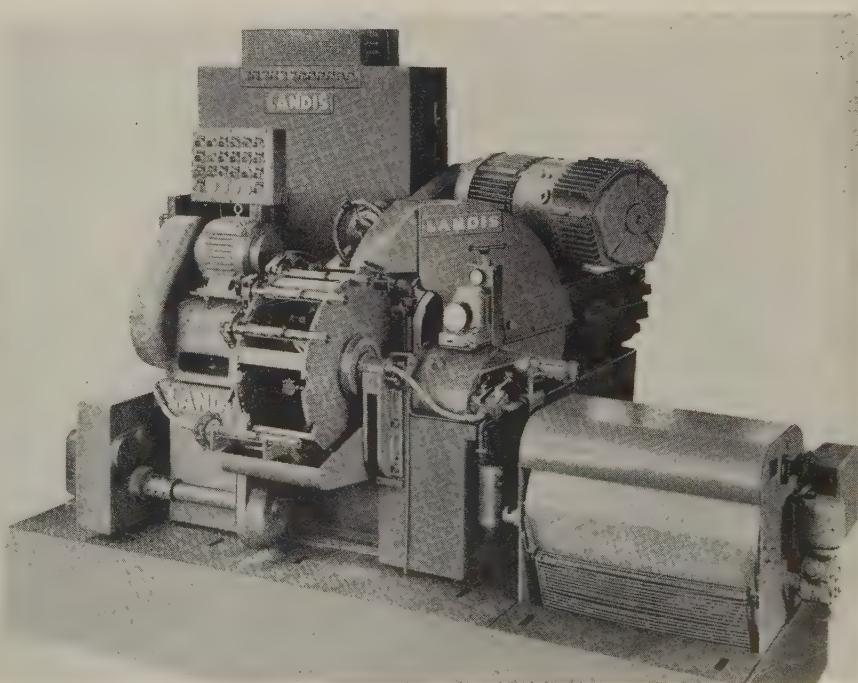
# Cylindrical Grinder Finishes Multiple Diameters

BECAUSE it can utilize a formed grinding wheel, or several grinding wheels at once, the Landis R plunge grinder can grind a face and several diameters in one operation.

It is designed for production infeed grinding of cylindrical work with automatic operation. Says the builder: The machine makes it possible to grind to closer tolerances than possible before with a high production automatic grinder, practically eliminating scrap and rework.

Since the machine is for infeed grinding only, there is no swivel table or carriage. The headstock and footstock are mounted on columns secured to the front of the bed. That design makes it possible to use an automatic rotary type loader or a chute type loader for handling workpieces.

Introduced on the grinder is the



new Landis Microfeed wheel feed system (hydraulic and mechanical feed are combined). The outstanding feature of the system is its ability to duplicate its action for piece after piece. It will feed the grinding wheel in increments as small as 50 millionths of an inch.

For more information, write Landis Tool Co., Waynesboro, Pa.

## Feeds Cylindrical Parts

FEED SPEEDS far in excess of conventional gravity methods are obtainable with the new Clark hopper

per feeder. It's accomplished through application of a continuous operating vane-type elevator that aligns and conveys cylindrical stock from the hopper, and a powered out-feed mechanism.

The unit feeds any cylindrical part or stock length bar or tube in steel, copper, brass, aluminum, fiber, nylon, and other materials. The feed mechanism is capable of conveying parts up to 20 ft from the feeder escapement to the operating machine.

The feeder converts manual or semiautomatic machines into automatic operation. Up to 7000 average length cylindrical pieces per hour can be fed into centerless grinders, automatic lathes, dial feed

presses, forming machines, assembly devices, and similar equipment.

For more information, write Clark Industries, P. O. Box 314, Delaware, Ohio.

## Coated Abrasives Give Up to 200% More Life

UP TO 200 per cent longer life, two to four times greater particle density, and more efficient cutting, compared with some older methods, are claimed for the line of Magnecoated discs.

Feature of the Magnecoating process is magnetic orientation of the abrasive particles so they are firmly

# Gear Shapers, Hobbers Modified for U. S. Market

U. S. VERSIONS of the Lorenz line of gear shapers and hobbers, made in Western Germany, will be marketed by Michigan Tool Co.

An important modification includes U. S. electrical equipment and controls. All machines will conform to JIC standards.

They will bear the name Michigan-Lorenz.

The gear shaper line comprises four models for gears up to 20 in.

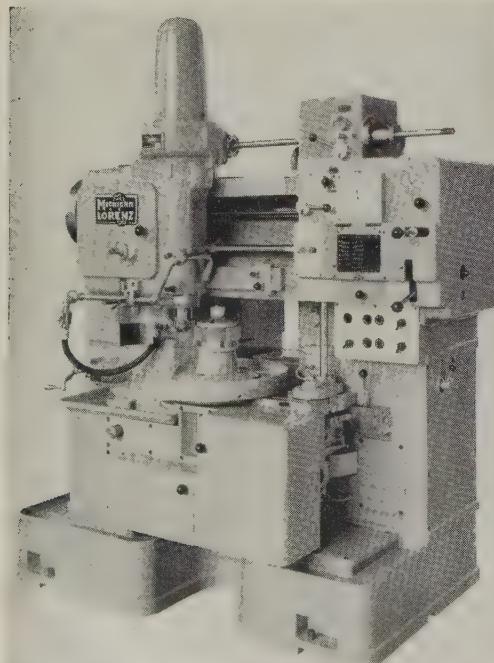
in diameter, two models for shaper cutting of closed gap herringbone gears, and a machine for cutting racks up to 6 ft long.

Two series of hobbing machines will be offered—medium capacity and large capacity. Two models for gear diameters up to 35 in. and 47 in. comprise the medium capacity series. Four models in the large capacity series cut gears up to 13 ft in diameter.

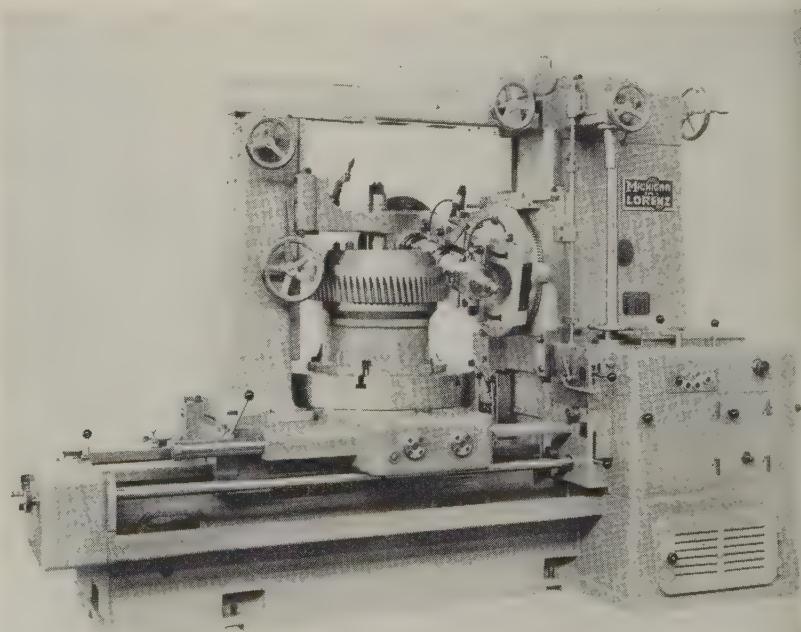
The Michigan-Lorenz gear shapers are intended for fully or semi-automatic production of spur and helical gears of both the internal and external types, racks, sprockets, and other special profiles.

All of the hobbers are single spindle type, for conventional and climb hobbing, including power infeed.

For more information, write Michigan Tool Co., 7171 E. McNichols Rd., Detroit 12, Mich.



SN-5 shapes gears up to 20 in. in diameter



E-12 hobber machines gears up to 4 ft in diameter

imbedded in the adhesive coating with the sharpest points upward. Excess loose particles are removed from the coated discs by magnetic force, leaving a clean, sharp cutting surface.

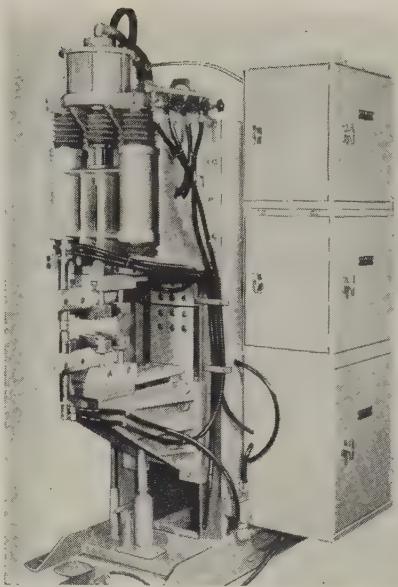
Discs are available in standard grits for all normal grinding and finishing operations.

For more information, write Abrasives Co. of America, 492 Main St., Ft. Lee, N. J.

## Single Phase Welders Will Join All Metals

ALL WELDABLE metals, including steel alloys, aluminum, bronze, and magnesium, can be handled readily in the Electro-Weld universal welders.

With readily added controls, the single-phase resistance welders can duplicate the performance of three-phase welders in meeting most job specifications, says the manufacturer.



Features of the line include aluminum rams, a new lineal ball bearing sleeve, a heat vector up and down slope control, and a friction-free neoprene cylinder ring. Advantages claimed for the new lineal ball bearing sleeve include friction-free operation of the welding head, an ability to withstand the heaviest pressures, nonbinding, noninhibited ram performance, instant follow-up

in controlling weld properties, and elimination of ram replacement or regrinding.

For more information, write Electro-Weld Div., Electric Arc Inc., 152-1 Jelliff Ave., Newark 8, N. J.

## Crane, Hoist Motors

SMOOTH starts of heavy loads with increased safety and control are the advantages of the special Reuland motors.

Their high slip, high torque characteristics make them ideal for bridge, trolley, and hoist drives.

The motors are specially wound for use on material handling equipment.

They are available in ratings from  $\frac{1}{2}$  through 50 hp.

They can be ordered in frame sizes 182 through 365U, in drip-proof or totally enclosed designs.

For more information, write Reuland Electric Co., Alhambra, Calif.

## Tracer Converts Machine For Contour Turning

CONVERSION of vertical turret lathes for contour turning within extremely close tolerances can be accomplished with the electronic-hydraulic Duplimatic tracer control attachment.

It permits internal and external contouring of hemispherical or irregularly shaped surfaces. Tolerances of  $\pm 0.005$  can be held at 25 sfpm,  $\pm 0.0005$  at speeds up to 5 sfpm.

The tracer unit in no way interferes with conventional operation of the machine tool.

For more information, write Tracer Control Co., 595 E. Ten-Mile Rd., Hazel Park, Mich.

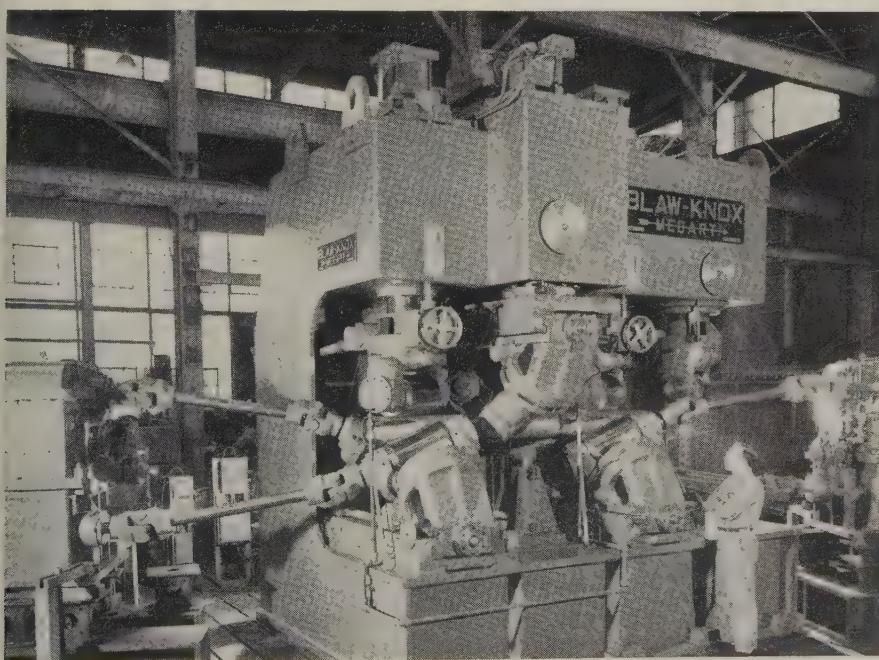
## Filter Has Dual Purpose

A COMPACT, self-contained filtration and pump unit offers metalworking shops a solution to problems of ample and properly filtered coolant supply.

The unit also can provide an efficient means of recovering chips or grindings of precious or semiprecious metals.

The unit is equipped with large (850 sq in., each side) disposable paper filters that can be changed

(Please turn to Page 176)



**NEW MULTICYCLE TUBE STRAIGHTENING MACHINE** will be used by a producer of heat treated oil well casing to straighten large diameter, thin wall, steel tubing. The machine maintains true circular cross section of the work during straightening without guides. It has four driven rolls for balanced turning torque around the tubing. It features a cluster of three rolls (two driven) at the input end, a twin roll bending stand, and another cluster of three rolls (two driven) and a single bending roll at the exit end. For more information, write Blaw-Knox Co., 300 Sixth Ave., Pittsburgh 22, Pa.

*breakthrough*

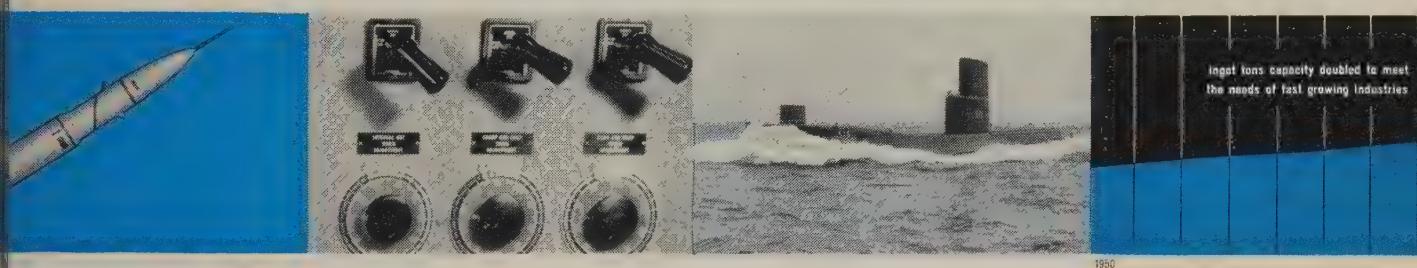


1898

Sixty years ago, "breakthroughs" like this made headlines around the world. From somewhere in America was coming fantastic new ammunition that shattered Cervera's fleet at Santiago—won victories for Dewey at Manila Bay.

To a unique group of steel specialists, in Reading, Pa., these wondrous new armor-piercing projectiles were especially important. For they represented what was to be only one of a long line of startling discoveries in steel that would eventually unleash the workshops of a nation.

Other "firsts" followed quickly: the earliest automotive alloys; tools steels that pioneered the way to mass production; free-machining stainless steel; and more recently, new processes and wonder alloys bearing strange names most familiar to technicians of the Atomic Age . . . VEGA, MEL-TROL and Free-Cut INVAR "36".



## breakthrough . . . today

Quality before quantity have been sacred *Carpenter* watchwords down through the years.

Within the past year, however, *Carpenter* doubled its *ingot tonnage capacity*. New acquisitions, new furnaces, mills and finishers—all completely equipped with precise and unique *Carpenter* quality controls—have started operation.

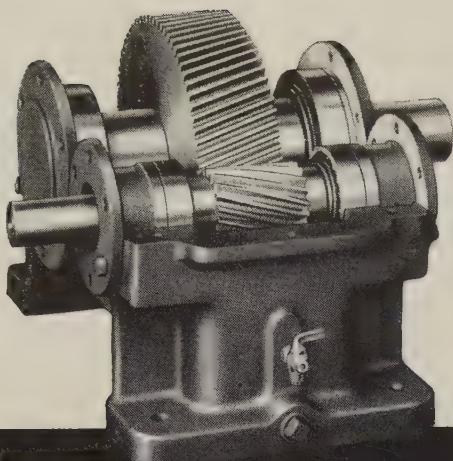
Capacity—mass production of specialty steels for critical applications—is an established fact.

In the years ahead, *Carpenter* will continue to "breakthrough" . . . to lead the way and grow apace of the ever-increasing demands of industry for the world's finest specialty steels.

tool and die steels  
stainless steels  
**Carpenter steel** electronic and magnetic alloys  
special-purpose alloy steels  
valve, heat-resisting and super alloy steels  
tubing and pipe  
fine wire specialties

The Carpenter Steel Company  
Main Office and Mills, Reading, Pa.  
Alloy Tube Division, Union, N. J.  
Webb Wire Division, New Brunswick, N. J.  
Carpenter Steel of New England, Inc., Bridgeport, Conn.





## Eliminate Your Down Time Worries . . .

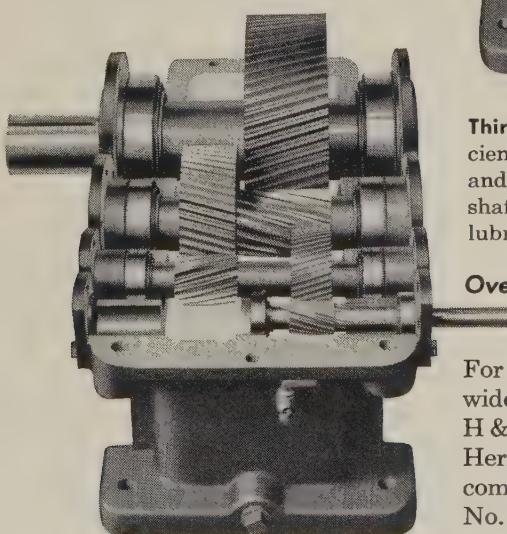
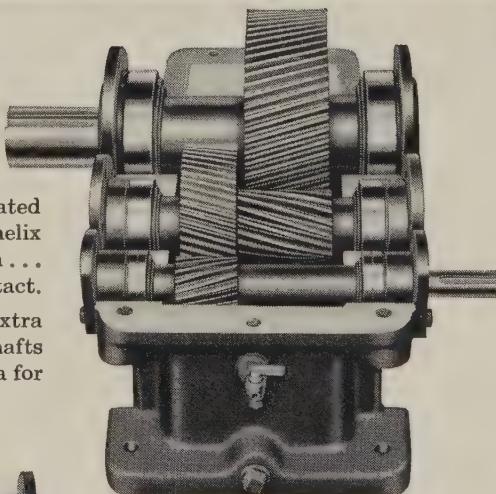
### Specify **H & S** **Helical Speed Reducers**

Single • Double • Triple Reduction

Extra rugged construction, simplicity of design are your assurance of consistent day-in-day-out trouble-free operation and exceptionally long service life. Here's why:

**First**—The helix gears are generated by H & S at the most efficient helix angle to insure smooth operation . . . several teeth are always in contact.

**Second**—Heavy-duty housings, extra bearing capacity and oversize shafts guarantee ample reserve stamina for the most exacting demands.



**Third**—Bearings and gears are efficiently splash lubricated, and dust and oil-proof seals on extending shafts keep out trouble—keep in lubricant.

*Overall design conforms to AGMA  
specifications*

For more detailed specifications, wide size and capacity range of H & S Speed Reducers (Helical, Herringbone, Worm Gear and combinations) write for Catalog No. 55.

**THE HORSBURGH & SCOTT CO.**

GEARS AND SPEED REDUCERS

5112 Hamilton Avenue • Cleveland 14, Ohio

easily. It will maintain filtration efficiency in the order of 5 microns.

For more information, write Electroforce Inc., Fairfield, Conn.

## Electrolytic Etch Mark Made in 15 Seconds

IDENTIFICATION, trademarks, and inspection code numbers can be etched on parts and assemblies in 15 seconds with the VT-15A power unit operating through specially prepared stencils. A mark 0.003 in. deep can be produced in 15 seconds on ferrous metals.

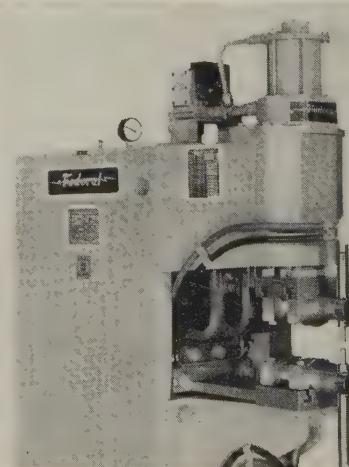
Electrolytic marking is suited for small, delicate parts or thin cross sections because of the absence of destructive stresses and deformation.

For more information, write Lectroetch Co., 14925 Elderwood Ave., East Cleveland 12, Ohio.

## Press Resistance Welders Available in Three Types

BUILT to deliver high production runs at lowest cost, the new line of Federal press type resistance welders ranges from 30 to 500 kva.

Each size is available as a spot-welder, a projection welder, or a combination spot and projection welder in a range of throat depths, electrode forces, and transformer sizes.



New design features include a one-piece slim line frame that takes less floor space and gives greater working area, and an antifriction

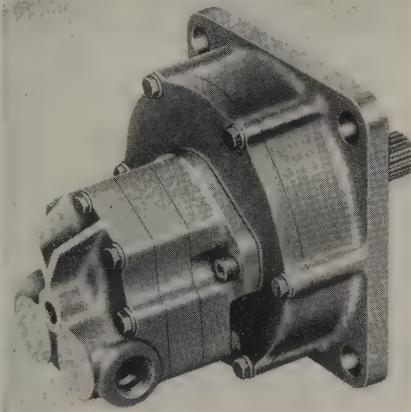
slide that is easily adjusted for wear.

For more information, write Federal Machine & Welder Co., Warren, Ohio.

## Hydraulic Motor Has Integral Gear Reducer

DESIGNED for the original equipment market, Webster's new hydraulic motor gear reducer consists of a gear type fluid motor mounted as a part of a planetary gear reducer.

It can be used for driving rotary soldering, welding, or heat treating fixtures; powering hoists, cranes, or rope drives; turning turrets and platforms; driving elevators and conveyors.



The high reduction ratio (4.6:1) assures smooth output even at low shaft speeds. The unit is designed to provide 150 ft-lb of output torque when used with an oil source capable of providing 1500 psi.

For more information, write Webster Electric Co., Racine, Wis.

## Arcwelders Can Be Tailored to Needs

MANY optional features of the TM Idealarc welding machines permit them to be tailored to customer needs. Built for manual arcwelding, they are available as alternating current transformer units, or ac-dc rectifier types.

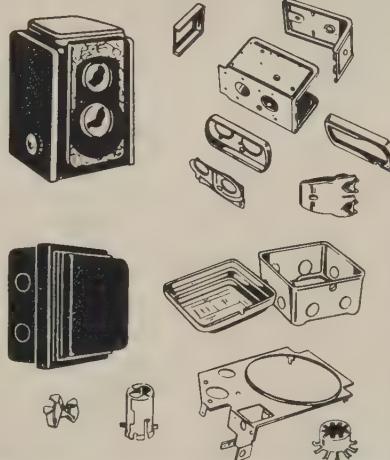
Optional features which can be selected include remote control of

(Please turn to Page 182)

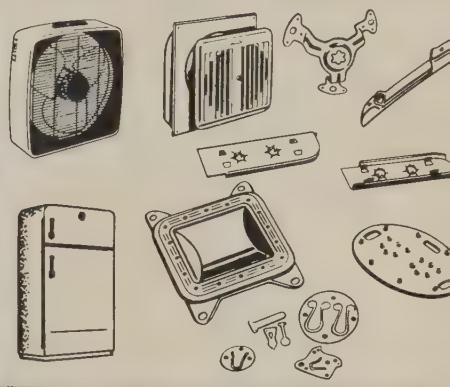
## Check DE-STA-CO

## for Stampings with the Plus

### ELECTRICAL ELECTRONIC PHOTOGRAPHIC



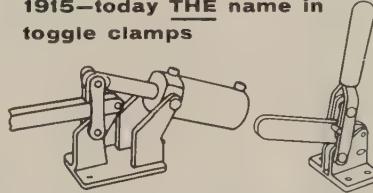
### HEATING-COOLING



### HARDWARE AUTOMOTIVE AIRCRAFT



**DE-STA-CO—stampings since 1915—today THE name in toggle clamps**



De-Sta-Co has been recognized for over 25 years for its leadership in the field of production clamping devices. Today, our engineers are creating improved and special toggle clamps to meet your specialized production problems in every field. Over 130 models, types and sizes, stocking distributors everywhere. Send for catalog.

Our range of stamping production has made De-Sta-Co known as an important source from coast to coast. We're regular suppliers to the most widely diverse industries—electrical, electronic, photographic—refrigeration, heating and ventilating—hardware, automotive, aircraft. All of these require top quality—and we take off our hats to none—but in addition to quality they want De-Sta-Co's other pluses: service, integrity, modern equipment, second operation facilities, ample inventories of all common and many unusual materials. Our know-how is as extensive as you'll find in the business and the big pluses we give you gratis!

Next time, check with De-Sta-Co for stampings, prices and PLUSES! Prints, samples or detailed letter will get you fast results. Qualified representatives from coast to coast. Write for the name of the De-Sta-Co man in your area.



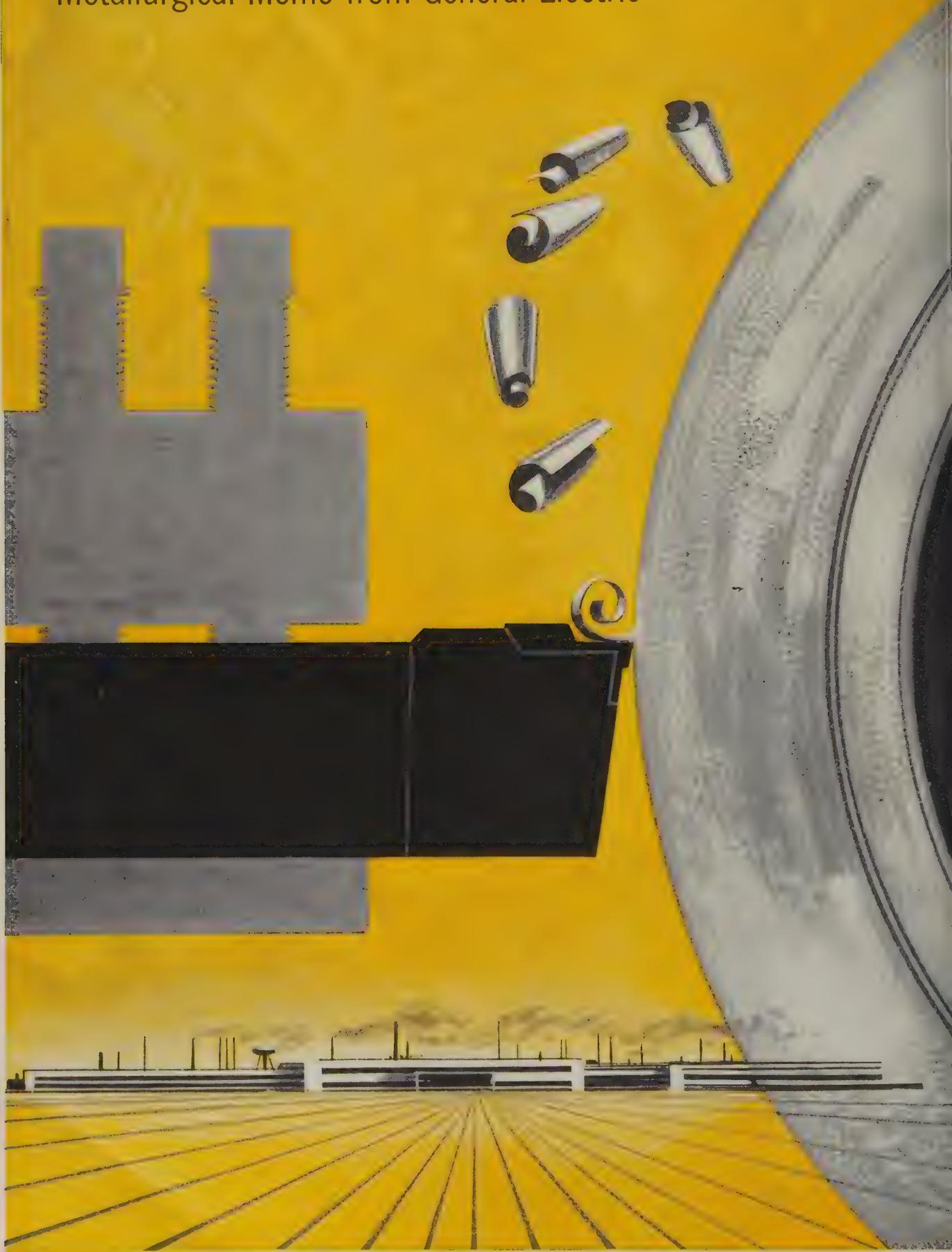
ORIGINATORS OF  
PRODUCTION  
CLAMPING

**DETROIT STAMPING COMPANY**

359 MIDLAND AVENUE • DETROIT 3, MICHIGAN

De-Sta-Co is widely known for toggle clamps, stampings, precision washers, spacers, shims, shim and feeler stock, blower housings and marine specialties.

# Metallurgical Memo from General Electric



# Why 242 different toolholders?

Metallurgical Products Department reports  
on an expanded new line of Lift-O-Matic toolholders  
... 242 sizes to speed changeovers on every job

Nobody needs to tell you what carbides have done for metalcutting . . . or how Carboloy® disposable inserts have led the way. *But making inserts is only half the job*; the other half is to provide you with toolholders that let you get full value from these miracle metals.

*Carboloy Lift-O-Matic toolholders do this job.* There are now three types—positive rake, negative rake, and tracer. All provide access to the clamp setscrew from either top or bottom—all provide for fastest possible indexing or changeover—all cut your inventory needs by providing interchangeability of parts. In addition, Carboloy *heavy duty* toolholders are made for cutting conditions where a maximum strength holder is demanded.

This expanded Lift-O-Matic toolholder line is stocked by your local Authorized Carboloy Distributor—3 types, 9 styles, 242 sizes—plus the widest range of styles, sizes, and grades of *inserts* in the industry. Call him (see the Yellow Pages under "Carbides"); or write: *Metallurgical Products Department of General Electric Company, 11141 East 8 Mile Street, Detroit 32, Michigan.*



New! Self-raising chipbreaker clamp. A twist of the wrist releases insert for indexing . . . automatically lifts and lowers chipbreaker. No more prying chipbreaker free. No more fumbling with loose chipbreaker. You choose from three chipbreaker widths for more accurate chip control.

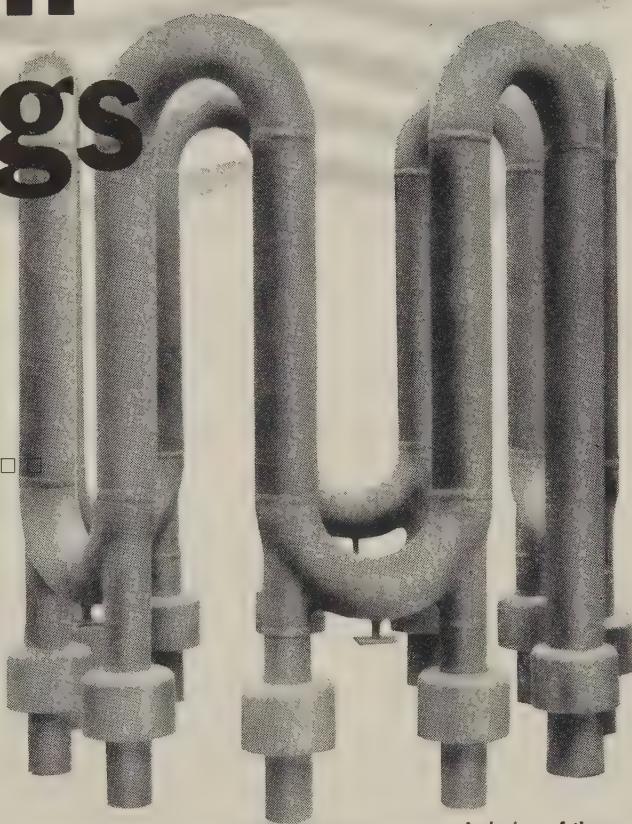
**CARBOLOY®**  
CEMENTED CARBIDES

METALLURGICAL PRODUCTS DEPARTMENT

**GENERAL ELECTRIC**

CARBOLOY® CEMENTED CARBIDES • MAN-MADE DIAMONDS  
MAGNETIC MATERIALS • THERMISTORS • THYRITE® • VACUUM-MELTED ALLOYS

# when things are **HOT.** call on **Duraloy**



A design of the  
A. F. Holden Co.,  
Detroit, Mich.

## Castings that Keep their Load-Carrying Strength at High Temperatures

This "immersion type radiant heater" is typical of the high reliability castings turned out by DURALOY. Centrifugally cast tubes with *UNIFORM* wall thickness...for longest service life. Static cast collars and shell molded bends...typical of DURALOY versatility.

For your high alloy casting requirements check with DURALOY... our long experience, ultra-modern foundry and up-to-the-minute test equipment will be helpful in solving your problems. For more information ask for Bulletin No. 3150 G.

**DURALOY Company**  
OFFICE AND PLANT: Scottdale, Pa.  
EASTERN OFFICE: 12 East 41st Street, New York 17, N. Y.  
ATLANTA OFFICE: 76-4th Street, N.W.  
CHICAGO OFFICE: 332 South Michigan Avenue  
DETROIT OFFICE: 23906 Woodward Avenue, Pleasant Ridge, Mich.

current and polarity, a low contactor that reduces open voltage when the machine is not welding, a line contactor overload protection, an arc that provides a current surging arc striking, and power correction condensers.

The welders have a current control of the mechanical, movable reactor type and are made in rated 300, 400, 500, and 650 ampere sizes.

For more information, write to: Lincoln Electric Co., Cleveland, Ohio.

## Power Sweeper Cuts Of Narrow-Aisle Clea-

TRAVELING at speeds up to 10 mph, the Model 53 power sweeper cleans a path 28 in. wide (plus 10 in. with sidebrush) three to seven times faster than is possible with a broom.

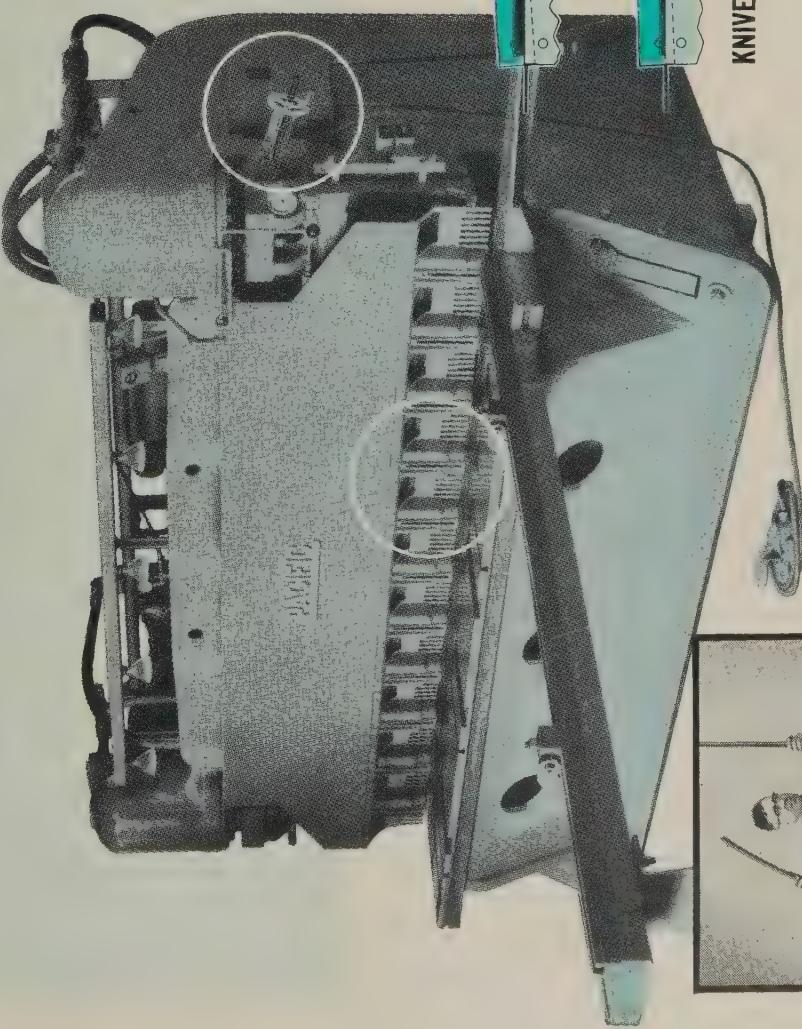
The sweeper picks up heavy



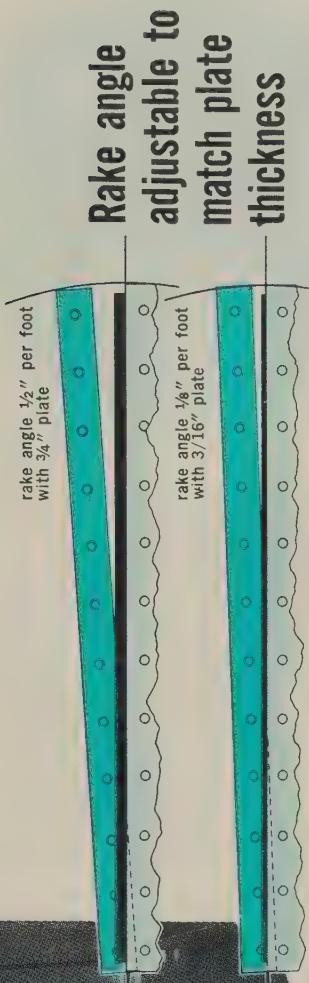
debris and fine dust at the same time. A high speed 28 in. sidebrush (revolving inside a v-grooved equipped compartment) hurl dirt directly into a 4.5 cu ft bin. A high volume fan sucks up the dust, forcing the dirt-laden air stream through a heavy duty filter.

For more information, write to: Tennant Co., 721 N. Lilac Street, Minneapolis 22, Minn.

## Adjustable rake PACIFIC HYDRAULIC SHEAR...



the single shear that produces  
highest quality cuts on both  
light and heavy metals.



### KNIVES STAY SHARP UP TO A YEAR OR MORE OF CUTTING 8 HOURS A DAY

Adjustable rake Pacific does the work of 2 or 3 conventional shears. It saves capital investment, valuable floor area and costs less to install. Heavy duty Pacific pays for itself out of operational savings . . . it takes fewer hands to operate, makes better cuts, requires little or no maintenance, virtually eliminates production downtime.

A Pacific shear for your heaviest cutting eliminates the

wasteful expense of slow, costly burning. Powered hydraulically, Pacific cuts with a shockless, cushioned stroke . . . knives stay sharp longer saving cost of regrinding or replacement. Recurring costly downtime for turning or changing knives monthly is practically eliminated. Pacific is "quiet as a sewing machine" . . . it encourages greater efficiency from workers in plant or office.

Write for circular

**PACIFIC INDUSTRIAL MFG. CO.** • 848 49th AVE., OAKLAND, CALIF. • PLANTS: OAKLAND, CALIF. AND MT. CARMEL, ILL.

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Cuts up to 60 strokes per minute with  
minimum twist, bow and camber.  
Left, 1/4" plate cut with maximum rake  
angle. Right, 1/8" plate cut with min-  
imum rake angle.





35 complex impeller blades are profiled from the solid with this custom-built milling machine. Machining involves compound curvatures, thicknesses and depths. \*Cost per piece was reduced from \$1,280 to \$141.

## Machining Cost Reduced 89% with Custom Designed Tools

Critical and growing need for cost reduction in machining complicated parts requires machines tailored to the job.

In this period of increasing complexity of design of many parts and components and during the present evolution of harder, tougher alloys, management and methods men are being compelled to search far and wide for tools more suited to their needs than so-called standard types. In fact, the selection of specially designed tools is indicated more and more since it often goes to the heart of reducing costs all along the line.

As a case in point, the machine illustrated above paid for itself in less than two months. Production time per piece was reduced from 100 hours to 11 hours.

The machine illustrated was designed by the pioneer in the field of tracer control; it is just one

of many manufactured by this machine tool builder which employ hydraulic or electronic tracers or which operate from punched cards, punched tape or magnetic tape to meet the exacting demands now present in the metal cutting field. You may have a part or problem involving cost reduction, productivity, accuracy or finish. If so, you will find it worthwhile to write the George Gorton Machine Co., 2004 Racine Street, Racine, Wisconsin.

Immediate attention and prompt analysis of your requirements will be provided without obligation.

*\*Above figures are based on operator cost of \$2.80 per hour and machine hourly rate of \$10.00.*

# NEW literature

Write directly to the company for a copy

### Merchant Pig Iron

A 28-page book (ADV. 911) gives a brief history of pig iron production. It tells about the various grades Republic Steel produces and the field, laboratory, and mill metallurgical services available. Advertising Div., Republic Steel Corp., 1441 Republic Bldg., Cleveland 1, Ohio.

### Valve Finder

A catalog discusses air valves and their selection. It lists all Hannifin valves. Dept. 124, Hannifin Co., Des Plaines, Ill.

### Aluminum Building Products

A 12-page booklet describes aluminum industrial building products and accessories. Dept. NR-21, Kaiser Aluminum & Chemical Sales Inc., 919 N. Michigan Ave., Chicago 11, Ill.

### Foundry Equipment

"The Story of the Speedmuller," reviews sand preparation needs and helps you determine your exact requirements. Beardsley & Piper, division of Pettibone Mulliken Corp., 2424 N. Cicero Ave., Chicago 39, Ill.

### Machine Design Data

"Design Ideas No. 21" gives examples of how the proper use of stiffeners in a machine design can initiate savings in cost. Lincoln Electric Co., Cleveland 17, Ohio.

### Expanded Metal Products

Safety Grip strut grating in steel, aluminum, and stainless, and Gold Nugget welding grating are described in a catalog. A companion catalog describes Safe-Gard expanded metal partition panels for conveyor and machine guards, and in-plant partitions. Products Div., Globe Co., 4000 S. Princeton Ave., Chicago 9, Ill.

### Rolling Steel Doors

A 16-page catalog, G-59, lists requirements for installation, specifications for manual and automatic power operation, and other data. Rolling Steel Door Div., R. C. Mahon Co., E. Eight-Mile Road, Detroit 34, Mich.

### Flexible Hose

Bulletins 83 and 84 show how flexible hose can be used to advantage in air handling and fume control. Flexaust Co., 100 Park Ave., New York 17, N. Y.

### Furnaces and Atmosphere Units

A 12-page bulletin, No. 653A, describes Hevi-Duty's range of electric and fuel fired heat treating furnaces and protective atmosphere generators. Hevi-Duty Electric Co., Milwaukee 1, Wis.

## Market Outlook

April 6, 1959

## Stockpiles Growing, But Imbalances Likely

INVENTORY ACCUMULATION is not progressing as smoothly as expected. Some consumers will have enough metal to weather a long steel strike, but some will be caught short.

Last month, steel users added about 1.5 million tons to inventories even though they chewed up steel faster than they had anticipated. This month the situation will be about the same. But next month they will add somewhat less as construction requirements pick up. Also, auto assemblies may pick up if good sales continue. By June 30 they will have upped their stockpiles to 21 million tons (from 13 million on Jan. 1). "That won't be excessive," a market analyst says.

**SOME MAY HAVE TROUBLE**—If the steelworkers quit work on July 1, most fabricators will be adequately protected for a month or six weeks. If trouble comes sooner, it will be because: 1. Buyers underestimated their first half consumption, didn't order enough steel for May and June delivery, and couldn't get on steelmakers' books for additional tonnage. 2. The best laid plans can result in imbalance from shortage of vital parts.

**TRANSPORTATION TIE-UP FEARED**—Another possible trouble spot could be shipping facilities. If consumers don't get all the steel they've ordered in the first half, it won't be because the mills haven't done their best to produce it. Finished steel is piling up on shipping platforms because trafficmen can't get the freight cars, trucks, and barges they need. Problems: 1. On some railroads, 25 or 30 per cent of the cars need repairs. 2. Many of the independent truckers did so poorly in 1958 that they couldn't maintain their equipment and can't pay for their 1959 licenses. 3. Some consumers became so enamored of truck service when they were living on minimum inventories that they poured blacktop over their railroad sidings. Now they can't get trucks, and they're in no position to accept rail shipments. 4. Winter floods destroyed many barges.

**AUTOMAKERS STOCK UP**—Fisher Body Div. of General Motors Corp. anticipates no trouble in getting its current inventory (15 days) up to the "desired level" by June 30. Ford Motor Co. will probably have to double up on releases and place additional orders to meet its objective. Its cars have been selling better than expected. One

automaker plans a \$75 million (14 week) steel inventory by June 30—enough for this year's cars and 45 days' production of 1960 models.

**BACKLOGS LEVEL OFF**—"We're still taking new orders at a high rate and watching our backlog climb," says one of the largest steelmakers. Others report a conspicuous drop in order entry and clear indications that backlogs have reached their peak. Most mills are sold out for the first half on sheets and heavily committed on hot-rolled bars, plates, line pipe, and oil country goods. Order books are open for the third quarter, but consumers aren't showing much interest.

**PRODUCTION SETS RECORD**—Last week's production was the largest in history: 2,661,000 net tons of steel for ingots and castings. Steelmakers operated their furnaces at 94 per cent of capacity (up 1 point) and beat the previous week's output by 30,000 tons. During March, they set a monthly record: 11.5 million tons. Best previous effort: October, 1956—11,048,513 tons.

## WHERE TO FIND MARKETS &amp; PRICES

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\*Current prices were published in the Mar. 30 issue and will appear in subsequent issues.

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## How much confidence do you have in your supplier of specialty steels?

Here's why we ask. We've won over a number of new specialty steel customers in recent months because of our ability and desire to provide top metallurgical assistance. It's paid off for our customers in a number of ways: less rejects, less scrap loss and fewer specification revisions.

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## COMPONENTS

## CURRENT INVENTORIES

## 2nd Quarter FORECAST

	UNDER 10 DAYS	10-30 DAYS	30-60 DAYS	60-90 DAYS	3-6 MONTHS	LOWER	SAME	HIGHER
CASTINGS Die, gray iron, malleable, nonferrous, steel.	2%	23%	52%	20%	3%	8%	56%	36%
OTHER FORMED COMPONENTS Forgings, stampings, springs, wire shapes.	1%	13%	46%	26%	14%	12%	57%	31%
MACHINED COMPONENTS Bearings, couplings, cylinders, gears, screw machine products.	2%	20%	45%	24%	9%	12%	65%	23%
ELECTRICAL EQUIPMENT, MOTORS . .	6%	25%	45%	16%	8%	10%	73%	17%
FASTENERS . . . . .	1%	20%	47%	23%	9%	7%	72%	21%
MECHANICAL RUBBER GOODS, BELTING	7%	22%	49%	20%	2%	10%	76%	14%

FIGURES are percentages of respondents to STEEL's quarterly survey.  
COLOR underscored figures show how most respondents reported.

# Inventory Buildup Continues

An increase in component stocks is predicted for the second consecutive quarter. The business recovery and slower deliveries are creating some difficulties

THE BUILDUP of component inventories begun last quarter is continuing. However, stockpiling goals have been readjusted in the light of increased business and slower deliveries.

In attempting to increase inventories to carry through the expected steel strike, component buyers have bumped into two problems: 1. The recession recovery has boosted business, diminishing supplies earmarked for summer. 2. The rush for goods has booked producers well in advance, slowing some deliveries.

"We have placed orders for steel requirements through September to be delivered before June 30," says one purchasing agent.

• **No Letup**—For the second consecutive quarter, respondents to

STEEL's quarterly survey predicting an increase in stocks outnumber those foreseeing a decline. About 26 per cent say they'll be higher at the end of June than at the conclusion of March. In STEEL's last survey (Jan. 5, p. 441), 27 per cent expected an upturn for the first quarter. Though 10 per cent project lower inventories in June, that's a 4 per cent jump over the last report.

Current reserves are above those of December. Excepting rubber goods, for which there was no change, all categories report 2 to 6 per cent increases in three to six month stock levels. There was a drop in 10 to 30 day supplies and an upturn in 60 to 90 day levels. Reserves under ten days remained stable.

• **Goals Not Reached**—Buyers of castings, machined and other formed components, and fasteners failed to reach inventory goals last quarter. Aims for this quarter have been tempered by the business situation, but stockpiling is still in progress. Electrical and rubber goods purchasers have had better success in raising stock levels. Their goals for the present quarter are not as high as they were at the first of the year. In fact, some reductions may appear.

• **Slower Deliveries**—About 30 per cent of STEEL's respondents mentioned delivery problems. The same number complained last December; at that time, spot shortages were causing moderate inconvenience.

Deliveries are becoming more extended and several companies foresee the situation worsening. Bearings were mentioned by 11 per cent of those polled. Forgings, castings, screw machines, some electrical

equipment, and stampings are also causing troubles.

Paradoxically, 2 per cent of the respondents were overstocked with bearings and 2 per cent had too many forgings. Another 2 per cent said suppliers' deliveries were inadequate.

## Reinforcing Bars . . .

Reinforcing Bar Prices, Page 199

Demand for reinforcing bars and wire mesh for construction applications is noticeably heavier. Bookings have picked up sharply. They

lagged behind other major products earlier this year. This reflects the seasonal upswing in building, and, to some extent, hedge buying against a possible midyear steel strike.

A leading producer of mat reinforcement for buildings and highways has started production of heavier gage material, 6/0 and 7/0 sizes. This welded fabric is being used for the first time in a New York office building.

Easiness in prices continues, notably at the fabricator-distributor level. Imported bars are contribu-

ting to the market softness.

New bridge requirements in New England involve 2500 tons of bars. In the Pacific Northwest, bids have been called for June 2 on the proposed Cougar Dam in Lane County, Oregon. This job involves 1225 tons of reinforcing bars, as well as 775 tons of liner plate, 880 tons of structural, and 60 tons of pipe. Bids are in on 5903 tons of bars required for the Lake Washington floating bridge at Seattle.

## Steel Bars . . .

Bar Prices, Page 198

Barmakers' order books are crowded for second quarter, though there's still some tonnage available for May-June shipment. Third quarter ordering is slow in developing, but sellers expect substantial bookings for that delivery position even though a midyear strike should be averted.

Consumers are not building up their stocks as well as they had planned because they have been consuming steel faster than they had anticipated.

While there's been no slackening in demand for hot bars, the situation is somewhat mixed with regard to cold finished. For example, at Pittsburgh, sellers report a sharp drop in their order intake. It appears consumers did most of their inventory buying in February, when they lined up tonnage for April, May, and June delivery. Now they're buying for current requirements.

Orders haven't declined in number, but they're down in tonnage. March entries of one area mill were 20 per cent below February's, but shipments were the best in two years.

"We'll ship 10 per cent more this month than we did in March," one company official predicted last week. "May will be about like April. The drop will come in June."

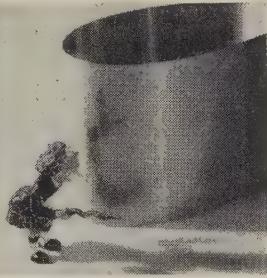
A midwestern producer of cold-finished says its March orders were down about 25 per cent from February's. He attributes the drop to the fact most users' first half requirements have been pretty well covered and they're not yet ready to enter the market for third quarter needs. Most bar users, it's said, think they'll have enough inventory July 1 to withstand a short strike, especially since curtailed con-

No matter which FINISH you like—you can buy it in

## MicroRold® QUALITY STAINLESS STEEL



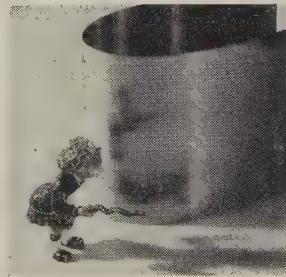
**2D**—A silvery white, but non-lustrous, surface produced by annealing and picking cold reduced material. Steel sheets & strip in this condition are most ductile and the surface holds lubricant well for severe drawing operations.



**2B**—Steel in the 2D condition which is subsequently rolled on a "skin pass" or temper mill. The surface acquires a bright finish from the polished rolls. This surface is somewhat more dense and hard than 2D and is a better starting surface for later finishing and buffing operations.



**No. 3**—This surface is made by grinding 2B steel with a No. 100 abrasive. This surface is smooth but not as reflective as 2B.



**No. 4**—A finer finish than No. 3 made by grinding 2B steel with a No. 150 abrasive. Like No. 3, this surface is easily blunted with hand grinders after forming, drawing or welding.



**No. 7**—Good reflectivity and brilliance made by polishing a No. 4 surface with a No. 400 abrasive. This semi-mirror finish must be protected during fabrication by adhesive paper or stripable plastics lest the finish be marred beyond repair.



**BRIGHT**—A highly reflective surface made by cold reducing with highly polished, glass-hard rolls. This finish is only available in Type 430 stainless.

These are our standard surface finishes that are regularly supplied in all stainless grades (including 18-8 chrome-nickel and 430 straight chromium), with the exception of 430 Bright which is Type 430 exclusively.

These finishes are regularly supplied in sheet and coil form in widths up to 48 inches.

Since No. 3, 4, 7 and 430 Bright are smooth reflective surfaces, they are not recommended for severe drawing without special precautions as the mill finish may be marred. Applications such as dairy ma-

chinery, kitchen and restaurant equipment and architectural decorative work require only local forming, so these highly polished surfaces are not greatly disturbed. All mill polished sheets are carefully packed to avoid handling imperfections. Protective adhesive paper can be specified by the buyer when needed.

For specific information on recommended surface characteristics for a particular stainless steel sheet and strip application, address your request to our Product Development Department.



**WASHINGTON STEEL CORPORATION**  
Washington, Pennsylvania

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sumption during July and August due to mass vacations will ease any supply pinch.

Carbon and alloy bar volume is heavier in New England. Defense requirements are up. A New Haven, Conn., shop has two contracts for the new U. S. M-14 rifle, totaling \$6,194,541. Winchester-Western Div., Olin Mathieson Chemical Corp., got the order.

## **Sheets, Strip . . .**

**Sheet & Strip Prices, Pages 199 & 200**

All first half production of flat-rolled steel is assigned, either on firm orders, or in tonnage set-asides for customers whose buying habits have long been established. But definite specifications have not been received in many cases for the closing weeks of the second quarter, and they are necessary before set-aside tonnage can be scheduled for rolling.

As leadtime for June in the major tonnage grades expires about Apr. 15, the mills anticipate a marked stepping up in formal ordering against known set-asides.

**Building Stocks** — Some leading consumers are aiming for a 60-day inventory by the end of June. Others, such as a large manufacturer of capital equipment in the Pittsburgh area, are pointing toward a 90-day inventory. The Pittsburgh firm is not stocking so heavily on silicon sheets because one supplier will not be affected by a strike.

In general, consumers are not going overboard in building stocks, and the mills are encouraging a moderate stocking policy.

Virtually all producers have opened their books for third quarter business. For the most part, entries are normal for the period; users are just starting to show interest in that delivery position. Actually, they are not rushing to get in tonnage, a situation probably explained by the uncertainties in the market outlook arising from the steel strike threat.

**Consumption Gains**—Some consumers have been using more tonnage than they had anticipated. So they have not added to their stocks to the extent they had planned. They may be pinched for supplies this summer in event of a prolonged steel strike. However, most buyers think they'll have adequate supplies to bridge a short strike, especially

since July-August vacation curtailments will limit consumption during those months. In event a strike is averted, it's figured there'll be plenty of tonnage available, since cancellations are likely even though higher prices are probable, strike or no strike.

Having covered their needs through the first half, New England consumers of sheet and strip are ordering at a slower pace. Most users in the area have ordered eight-to-nine month supplies for

shipment before June 30. Based on increased consumption, a considerable number of buyers are supplementing their original hedge orders. The warehouses are also scheduling heavier mill tonnage this quarter.

**Slow-down Noted**—A spokesman for an eastern sheetmaker last week said: "There has been a definite leveling off in the entry of new orders during the last week. We expect new orders to show a gradual decline through the rest of second quarter."

The Grain Div., U. S. Depart-



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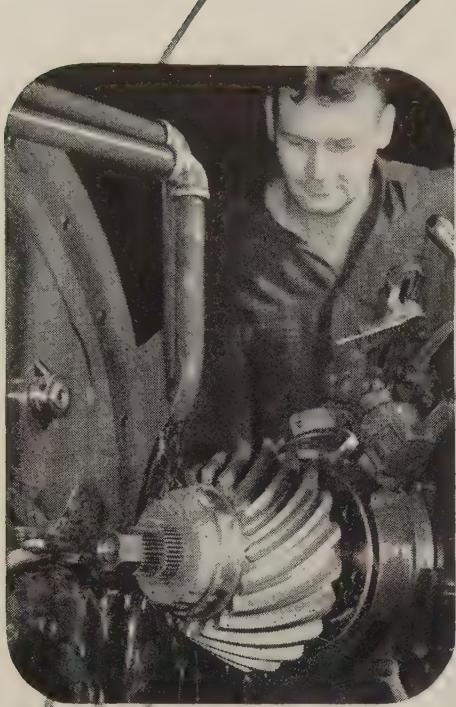
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ment of Commerce, closes Apr. 8 on 34,500 aeration duct assemblies for installation in CCC-owned standard metal bins (3250 bushel) in seven midwestern states.

Large contracts for 55 gallon drums, Quartermaster, Columbus, Ohio, include: 175,000 to U. S. Steel Products Corp., New York, \$1,224,500; Myers Drum Co., Oakland, Calif., 57,000 costing \$472,530; Inland Steel Container Co., Chicago, 25,000 costing \$181,000.

## Plates . . .

Plate Prices, Page 198

Supplies of plates are getting tighter. The mills are heavily booked through second quarter, and they are husbanding the little open tonnage still uncommitted for the period. The influx of railroad orders, and requirements of other late-comers have served to plug up most of the holes in mill schedules in a hurry. In event of a strike, some consumers may be pinched for supplies since they haven't been able to build stocks to hoped-for levels.

Although the wider and heavier sheared plates are hard to get, a large manufacturer of capital equipment says its first half inventory is right on schedule. Objective: A 90 day supply by June 30.

"We're having a little trouble with deliveries of a few items," a buyer comments, "but we're keeping the mills current on most of the things we've ordered. If we get through April on schedule, we'll expect smooth sailing until July. We've had a slight increase in our consumption rate, but not enough to affect our planning. If we face a shortage in a certain size, we just shift specs on the steel we've ordered. We hope to have about 80 per cent of our third quarter tonnage booked by Apr. 15."

Even though they're fully committed for the first half on wide plates (up to 160 in.), most producers could probably accommodate a big customer's request for additional tonnage in May or June. Specifications against mill set-asides for June are increasing as the expiration of leadtime for that month approaches.

Mills anticipate high level operations throughout the second quarter. Capital equipment requirements, except for railroads, are still lagging

but, in general, buying is fairly active. Construction needs have spurted recently and tank tonnage is heavier.

Books for third quarter have been opened by most makers, but orders for that position are light, and sellers are making no special effort to stimulate bookings for the period. Lack of large fabricating commitments is limiting forward ordering of plates to some extent.

## Tubular Goods . . .

Tubular Goods Prices, Page 202

Seasonal pickup in construction is being reflected in stronger demand for standard pipe. Other classes of tubular goods are also moving better, with buyers anxious to build up stocks against possible strike-induced shortages this summer.

The outlook for oil country goods is promising. Oil well drilling in the U. S. in the latest week of record was reported up, with 2003 rotary rigs drilling, against 1885 a week earlier. Last year at this time, only 1713 rotary rigs were in operation.

## Imports Hurt on Coast

Steel imports into the Pacific Coast area have risen 50 per cent in the last year, accounting for about 5 per cent of the area's total steel requirements.

Commenting on the situation, the Federal Reserve Bank of San Francisco says: "Although imports failed to make a substantial inroad on the relatively large market for construction steel, imported tubular and wire products hit some of the area's producers quite heavily."

"Japan accounted for nearly half the area's market for nails and wire products, while West European producers increased their share of the tubular market from 3 per cent in 1957 to almost 25 per cent in 1958."

## Structural Shapes . . .

Structural Shape Prices, Page 198

Structural steel bookings in February climbed 25 per cent over the previous month, totaling 294,367 tons, reports the American Institute of Steel Construction. The new orders exceeded last year's February tonnage by 109,000 tons.

Bookings in the first two months

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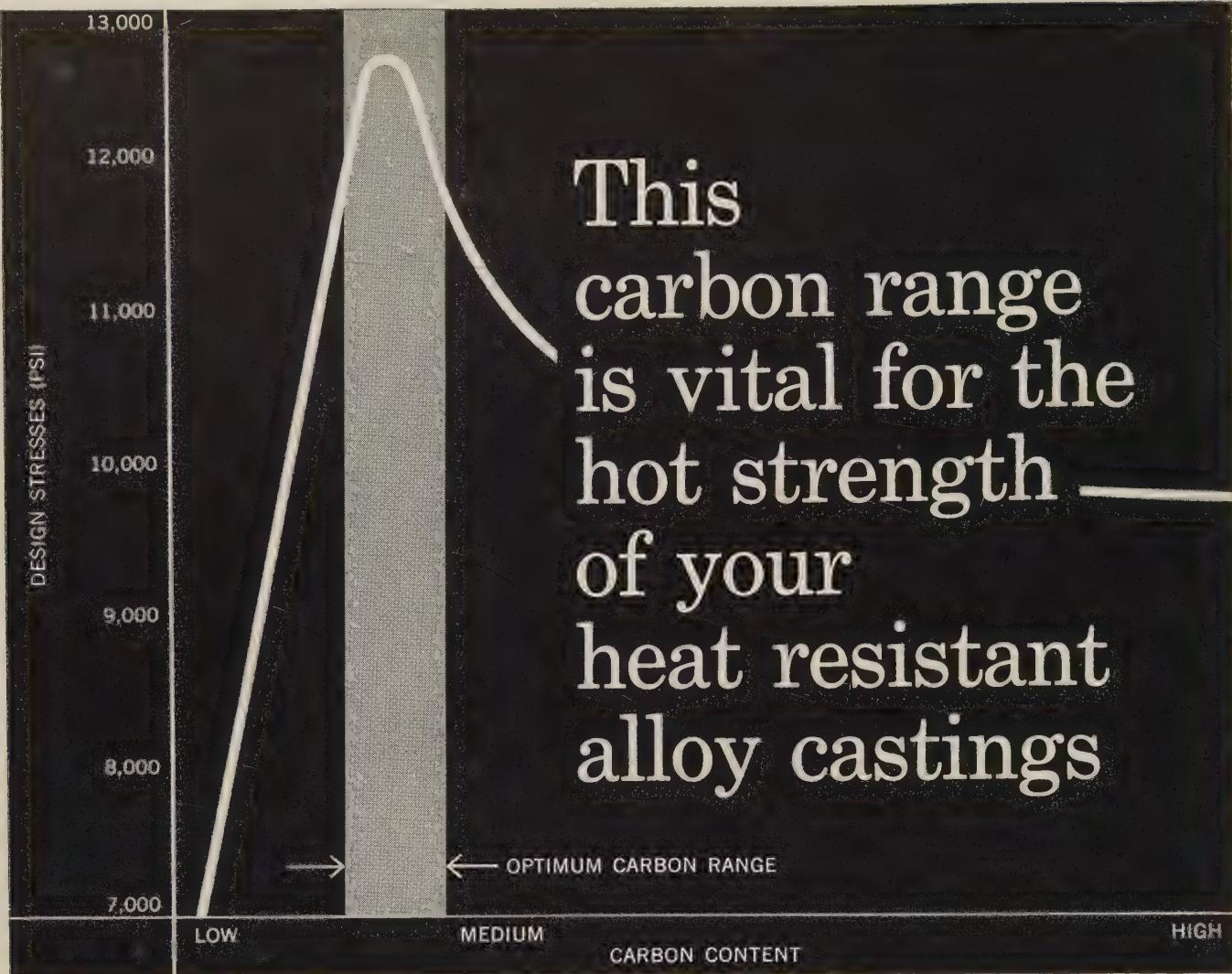
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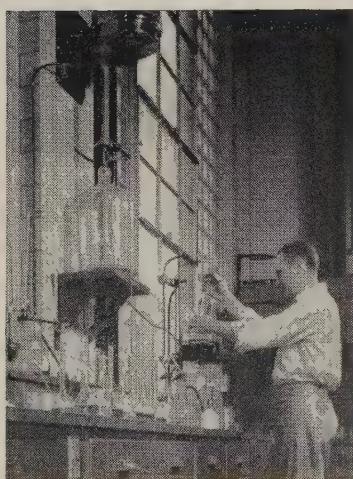
"L" BEARING      "SL" BEARING

**WRITE FOR BULLETIN 1058**

<b>SEALMASTER.</b> BALL BEARING UNITS	NAME _____
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	CITY _____ STATE _____



This carbon range is vital for the hot strength of your heat resistant alloy castings

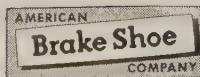


Every foundry heat is analyzed to insure specified alloy composition

This graph illustrates the effect of carbon content on the hot strength of a heat resistant alloy. It outlines an optimum carbon range. The graph shows how a carbon content outside the optimum range would seriously lower the hot strength decreasing the service life of the casting. The optimum carbon range is 0.10 percent.

Controlling carbon content to within one-tenth of one percent is difficult, but Electro-Alloys does it. Compositional control of castings at Electro-Alloys is exact and painstaking. Without this care you cannot expect maximum efficiency and long service life.

We have compiled an imposing file of data on the effects of carbon in alloy composition, and we can relate that data to your needs. To stop rising replacement and maintenance costs, check with us on carbon content while equipment is in the design stage. Contact Electro-Alloys Division, 1024 Taylor Street, Elyria, Ohio, and we will take all steps to insure the optimum composition for your casting.



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this year amounted to 530,151 tons, 52 per cent over the 347,804 tons booked in the like period last year.

Shipments in February were 216,127 tons, off 4 per cent from the January total. Shipments for the first two months of the year were 440,387 tons.

Order backlogs at the end of February totaled 1,853,791 tons. Of this amount, 1,149,904 tons were scheduled for fabrication during the four months ending June 30.

Fabricated structural prices are beginning to firm. Competition is still sharp, but price slashing isn't as rampant as it was a month ago. Largely, the steel strike threat is no longer a dominating factor in the awarding of new construction work. In most cases, where schedules haven't already been set up to avoid possible strike-induced shortages this summer, it's now too late to do anything.

Mill schedules are tightening and deliveries are becoming a little more extended. Bridge estimating is active but industrial and commercial building is slow. More public work is coming out, including schools and highways. Fabricated bridge prices are off in New England 35 to 40 per cent from the peak in 1957.

Public works before the market include an automatic post office and mail processing plant at Providence, R. I. Foreign steel underbid domestic by \$600,000 on a radio installation in Maine for the First Naval District, Boston, requiring 4000 tons for towers.

Bookings of west coast fabricators are expected to rise 10 per cent this year over last year's volume. It's thought 1960 volume will be still better, due to an anticipated rise in industrial construction.

A number of tonnages are before the market in the Pacific Northwest. These include 880 tons for the Cougar Dam in Oregon, and 700 tons for the Lake Washington floating bridge, Seattle.

## PIPE . . .

### CAST IRON PIPE PLACED

335 tons, miscellaneous sizes, Tacoma, Wash., to Pacific States Cast Iron Pipe Co., Seattle. 225 tons, Puget Sound Navy Yard drydock, to U. S. Pipe & Foundry Co., Seattle. 219 tons, 6 to 16 in., for Tacoma (Wash.) water system to the Pacific States Cast Iron Pipe Co., Seattle. 131 tons, various gages, for Wenatchee, Wash., to U. S. Pipe & Foundry Co., Seattle. 100 tons, projects at Silver Lake and Puyallup, Wash., to Pacific States Cast Iron Pipe Co., Seattle.

## STRUCTURAL SHAPES . . .

### STRUCTURAL STEEL PLACED

2550 tons, building, Rome Craft Paper Co., Rome, Ga., through Rust Engineering Co., to Ingalls Iron Works, Birmingham. 2325 tons, 98 transmission towers, Public Service Electric & Gas Co., New Brunswick, N. J., to American Bridge Div., U. S. Steel Corp., Pittsburgh. 1710 tons, 1025 ft combination stringer and girder bridge, Messalonskee Stream, interstate Route 95, Waterville, Maine, to Bancroft & Martin Rolling Mills Co., South Portland, Maine; Cianchette Bros. Inc., Pittsfield, Maine, general contractor; 1500 tons, steel H-beam piles, to Bethlehem Steel Co., Bethlehem, Pa. 1500 tons, Cooper Union Engineering Building, Astor Place, New York, through Vermilya Brown Co. Inc., to American Bridge Div., U. S. Steel Corp., Pittsburgh. 1400 tons, building, First National Bank, Atlanta, to Ingalls Iron Works, Birmingham. 1200 tons, medical and surgical building, State Hospital, Bronx, N. Y., through Depot Construction Co., to Lehigh Structural Steel Co., Allentown, Pa. 1028 tons, state bridges, Queens, N. Y., through Slattery Contracting Co., general contractor, to American Bridge Div., U. S. Steel Corp., Pittsburgh. 985 tons, 37 towers, Public Service Electric & Gas Co., Woodbury, N. J., to Lehigh Structural Steel Co., Allentown, Pa. 900 tons, electrical switchyard, New York Power Authority, Lewiston, N. Y., to Societa Anonima Electrificazione, Milan, Italy. 850 tons, factory, Nestle Chocolate Co., Salinas, Calif., to Bethlehem Pacific Coast Steel Corp., San Francisco. 835 tons, garage, Prudential Insurance Co., Newark, N. J., to Oltmer Iron Co., Jersey City, N. J. 700 tons, animal husbandry building, Cornell University, Ithaca, N. Y., through Walter A. Stanley Inc., general contractor, to Standard Structural Steel Co., Hartford, Conn. 600 tons, state highway structures, Mohawk



## RAIL AND TRACK EQUIPMENT

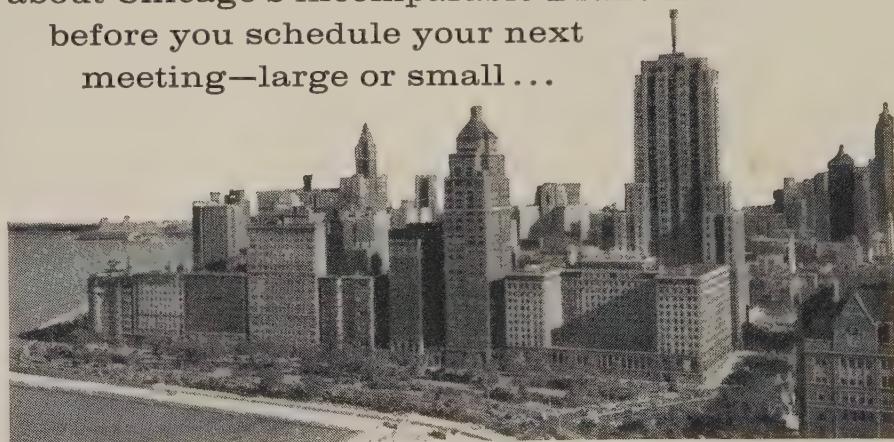
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DICK FLYNN  
V.P.—Sales

 **The Drake**  
HOTEL

LAKE SHORE DRIVE AND UPPER MICHIGAN AVENUE  
SUPERIOR 7-2200 • TELETYPE NO. CG1586

section, New York Thruway, Schenectady-Albany counties, New York, to Schenectady Steel Co., Schenectady, N. Y.; L. G. DeFalce & Son Inc., North Haven, Conn., general contractor.

545 tons, state highwaywork, Ansonia, Conn., through Mariani Construction Co., general contractor, to American Bridge Div., U. S. Steel Corp., Pittsburgh.

500 tons or more, including reinforcing bars, Bear Creek Bridge No. 2, and overpass, Baltimore, to Bethlehem Steel Co., Bethlehem, Pa.; McLean Contracting Co., Baltimore, general contractor.

355 tons, warehouse, American Can Co., Atlanta, Ga., to Mississippi Valley Steel Co., St. Louis.

355 tons, chemical plant, Union Carbide Chemical Co., a division of Union Carbide Corp., Seadrift, Tex., to Campbell Steel Co., San Antonio, Tex.

275 tons, Sears, Roebuck Shopping Center, Renton, Wash., to Isaacson Iron Works, Seattle; Cawdrey & Vemo, Seattle, general contractor.

275 tons, plant extension, Mundet Cork Corp., North Bergen, N. J., to Bethlehem Steel Co., Bethlehem, Pa.

200 tons, four traveling gantry cranes for municipal pier, Anchorage, Alaska, to Washington Iron Works, Seattle.

195 tons, manufacturing plant, Staten Island, N. Y., through Turner Construction Co., general contractor, to B. Katchen Iron Works, Newark, N. J.

175 tons, warehouse extension, Johns Manville Co., Lompoc, Calif., to Judson Pacific Steel Co.

160 tons, Hanson Dam, near Seattle, to unstaed fabricators; Kaiser Construction Co., general contractor.

#### STRUCTURAL STEEL PENDING

1795 tons, steel H-beam piles, piers, Washington channel bridge; bids in to District of Columbia, Department of Highways & Traffic.

1400 tons, engineering building, Cooper Union, New York; bids closed.

1225 tons, Cougar Dam, South Fork McKenzie River, Lane County, Oregon; bids June 2, U. S. Engineer, Portland, Oreg.; also, 200 tons tainter gates; 285 tons sliding gates; 60 tons of pipe and fittings.

1200 tons, laundry for city hospitals, Brooklyn, N. Y.; bids closed April 1.

1100 tons, three state bridges, Worcester, Mass.; bids Apr. 14, Massachusetts Department of Public Works, Boston.

880 tons, also 60 tons of pipe and fittings, Cougar Dam, Lane County, Oregon; bids to U. S. Engineer, Portland, Oreg., June 2.

700 tons, second Lake Washington floating bridge; Guy F. Atkinson Co., South San Francisco, Calif., is low at \$10,969,587.

500 tons, three steel bridges and approaches, interstate Route 93, Methuen, Mass.; also, seven prestressed and concrete structures; bids Apr. 7, Massachusetts Department of

Public Works, Boston.

206 tons, also 35 tons of reinforcing, Washington State truss bridge, Lewis County; Parker Construction Co., Chehalis, Wash., general contractor at \$150,932.

100 tons or more, warehouse and overhead crane; bids to the Bureau of Water Works, Portland, Oreg., March 31.

100 tons or more, hot cell and maintenance shops, four structures, and facilities, reactor experiment station, Arco, Idaho; Teller Construction Co., Idaho Falls, Idaho, low at \$666,500 to Atomic Energy Commission.

100 tons, 60-ton bridge crane, Hills Creek powerhouse, Oregon; Berger Engineering Co., Seattle, low at \$51,301, to U. S. Engineer, Portland, Oreg.

250 tons or more, composite building, Clear Air Base, Alaska; Baker & Ford, Belligham, Wash., low at \$3,666,499 to the U. S. Engineer.

200 tons, Washington State highway project, King County; also 70 tons, Clark County; bids to Olympia, Wash., Mar. 31.

130 tons, Washington State, King County overpass; bids to Olympia, Wash., Apr. 14.

100 tons or more, Oregon State, four highway bridges on steel piling, Lane County; Earl L. McNett, Eugene, low at \$477,817.

100 tons or more, Oregon State, five grade separations, Malheur County; Pacific Concrete Co. and Otis P. Jordan Jr., Portland, Oreg., joint low at \$533,333.

#### PLATES . . .

##### PLATES PLACED

1395 tons, alloy, three contracts, General Stores Supply Office, Navy, Philadelphia, to Lukens Steel Co., Coatesville, Pa.

1220 tons, alloy, three contracts, General Stores Supply Office, Navy, Philadelphia, to U. S. Steel Corp., Pittsburgh.

695 tons, high tensile, grade Hy-80, two lots, Navy Purchasing Office, Washington, D. C., to Lukens Steel Co., Coatesville, Pa.

400 tons, vapor saving tanks, Socony Mobil Oil Co., East Boston, Mass., to Chicago Bridge & Iron Co., Chicago.

107 tons, alloy, General Stores Supply Office, Navy, Philadelphia, to Lukens Steel Co., Coatesville, Pa.; also, 40 tons of stainless plates to Ingersoll Steel Div., Borg-Warner Corp., Chicago.

##### PLATES PENDING

5903 tons, second Lake Washington floating bridge, Seattle; bids in to Olympia, Wash. 5903 tons, Washington State, second Lake Washington floating bridge; Guy F. Atkinson & Co., South San Francisco, Calif., low at \$10,969,597, subject to 90 day delay to complete financing.

33,000 tons, Wanapum Dam, Columbia River; bid date set for May 8 to Grant County P.U.D. No. 2, Ephrata, Wash.

33,000 tons, Wanapum Dam, Columbia River; bids to Grant County P.U.D. No. 1, Ephrata, Wash., probably in May; plans by Harza Engineering Co., Chicago.

2825 tons, south approach, Washington State, Lake Washington freeway bridge, Seattle; S. S. Mullen Inc., Seattle, low at \$2,479,212.

2000 tons, garage structure, Seattle, general contract to Utah Construction Co.

1225 tons, Cougar Dam, Lane County, Oregon; bids to U. S. Engineer, Portland, Oreg., June 2.

510 tons, Washington State freeway underpasses, Seattle; bids to Olympia, Wash., Apr. 14.

375 tons, Washington State, four traffic separation bridges, King County, S. S. Mullen Inc., Seattle, low at \$366,150.

200 tons or more, 400,000 gallon elevated water tank; also H-piling and reinforcing steel involved, Glasgow (Mont.) Air Base; Pittsburgh-Des Moines Steel Co., Seattle, is low bidder at \$107,899 to the U. S. Engineer, Walla Walla, Wash.

100 tons or more, standpipe, Waterford, N. Y.; bids Apr. 17, water commissioners, contract E.

Unstated tonnage, 150,000 gallon elevated tank, launcher area, Langley AFB, Virginia; bids

Apr. 21, U. S. Engineer, Norfolk, Va.

#### RAILS, CARS . . .

##### RAILROAD CARS PLACED

Norfolk & Western, 1000 seventy-ton hopper-cars, to its own shops at Roanoke, Va.

#### DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

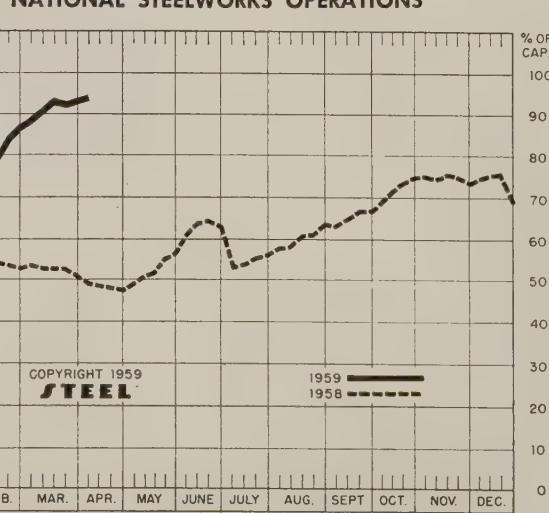
	Week Ended	Same Week		
	Apr. 5	Change	1958	1957
Pittsburgh	96	+ 1*	52.5	95
Chicago	96.5	+ 1*	53	87
Eastern	92	+ 1	49	95
Youngstown	93	+ 1	45	89
Wheeling	95	+ 2	67.5	90
Cleveland	96.5	0*	34.5	93.5
Buffalo	105	0	37	98
Birmingham	89.5	+ 1	53	97
Cincinnati	90.5	- 4*	46	69.5
St. Louis	90.5	+ 2.5*	70	101
Detroit	97	- 2*	22.5	95.5
Western	98	+ 3	63	104
National Rate	94	+ 1	48.5	92.5

#### INGOT PRODUCTION\*

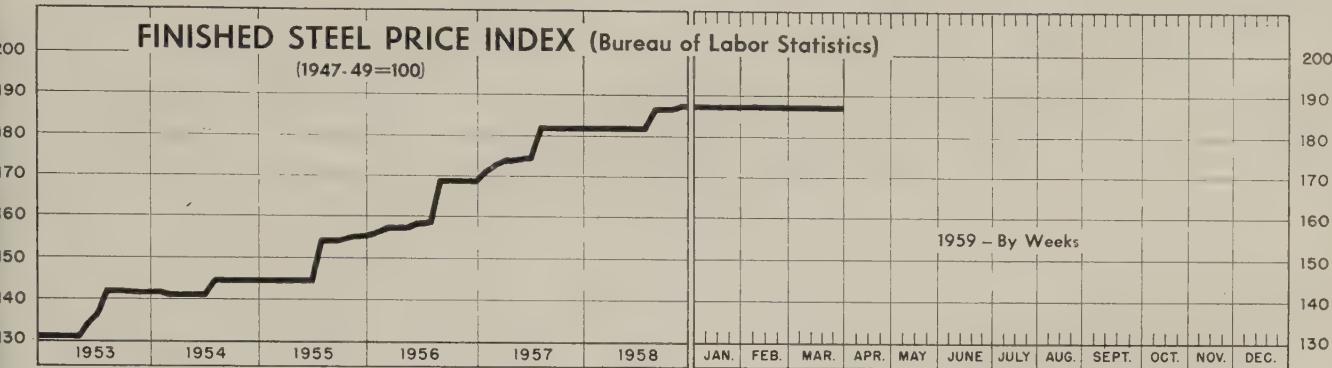
	Week Ended	Month	Year
	Apr. 5	Ago	Ago
INDEX	165.2†	163.8	159.1
(1947-49=100)			81.7
NET TONS	2,653†	2,631	2,556
(In thousands)			1,312

\*Change from preceding week's revised rate.  
†Estimated. †American Iron & Steel Institute.  
Weekly capacity (net tons): 2,831,331 in 1959; 2,699,173 in 1958; 2,559,490 in 1957.

#### NATIONAL STEELWORKS OPERATIONS



# Price Indexes and Composites



Mar. 31, 1959

Week Ago

Month Ago

March Avg

Year Ago

186.7

186.7

186.8

186.7

181.6

## AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended March 31

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	\$5.825	Bars, Reinforcing	6.385
Rails, Light, 40 lb	7.292	Bars, C.R., Carbon	10.710
Tie Plates	6.875	Bars, C.R., Alloy	14.125
Axes, Railway	10.175	Bars, C.R., Stainless, 302	
Wheels, Freight Car, 33 in. (per wheel)	62.000	(lb)	0.570
Plates, Carbon	6.350	Sheets, H.R., Carbon	6.350
Structural Shapes	6.167	Sheets, C.R., Carbon	7.300
Bars, Tool Steel, Carbon (lb)	0.560	Sheets, Galvanized	8.615
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680	Sheets, C.R., Stainless, 302	
Bars, Tool Steel, H.R. Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400	(lb)	0.673
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.895	Sheets, Electrical	12.625
Bars, H.R., Alloy	10.775	Strip, C.R., Carbon	9.489
Bars, H.R., Stainless, 303 (lb)	0.543	Strip, C.R., Stainless, 430	
Bars, H.R., Carbon	6.675	(lb)	0.480
		Strip, H.R., Carbon	6.250
		Pipe, Black, Butt-weld (100 ft)	19.905
		Pipe, Galv., Butt-weld (100 ft)	23.253
		Pipe, Line (100 ft)	199.53
		Casing, Oil Well, Carbon (100 ft)	201.080
		Casing, Oil Well, Alloy (100 ft)	315.213

Tubes, Boiler (100 ft)	51.200	Black Plate, Canmaking Quality (95 lb base box)	7.900
Tubing, Mechanical, Carbon (100 ft)	27.005	Wire, Drawn, Carbon	10.575
Tubing, Mechanical, Stainless, 304 (100 ft)	207.515	Wire, Drawn, Stainless, 430 (lb)	0.665
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	10.100	Bale Ties (bundles)	7.967
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.800	Nails, Wire, &d Common	9.825
		Wire, Barbed (80-rod spool)	8.719
		Woven Wire Fence (20-rod roll)	21.737

## STEEL's FINISHED STEEL PRICE INDEX\*

	April 1	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	247.82	247.82	247.82	239.15	189.74
Index in cents per lb	6.713	6.713	6.713	6.479	5.140

## STEEL's ARITHMETICAL COMPOSITES\*

Finished Steel, NT	\$149.96	\$149.96	\$149.96	\$145.42	\$113.73
No. 2 Fdry. Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	37.00	39.33	42.33	34.33	24.50

\*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

## Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	April 1	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.425	4.15
Bars, H.R., Chicago	5.675	5.675	5.675	5.425	4.15
Bars, H.R., deld., Philadelphia	5.975	5.975	5.975	5.725	4.405
Bars, C.F., Pittsburgh	7.65*	7.65*	7.65*	7.30*	5.20
Shapes, Std., Pittsburgh	5.50	5.50	5.50	5.275	4.10
Shapes, Std., Chicago	5.50	5.50	5.50	5.275	4.10
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.545	4.38
Plates, Pittsburgh	5.30	5.30	5.30	5.10	4.10
Plates, Chicago	5.30	5.30	5.30	5.10	4.10
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.10	4.10
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.10	4.10
Plates, Claymont, Del.	5.30	5.30	5.30	5.10	4.10
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.925
Sheets, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Chicago	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Detroit	6.275	6.275	6.275	6.05-6.15	4.975
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.60	5.275
Strip, H.R., Pittsburgh	5.10	5.10	5.10	4.925	4.425
Strip, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.15	5.45
Strip, C.R., Chicago	7.425	7.425	7.425	7.15	5.70
Strip, C.R., Detroit	7.425	7.425	7.425	7.25	5.45-6.05
Wire, Basic, Pittsburgh	8.00	8.00	8.00	7.65	5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.55
Tin plate(1.50 lb)box, Pitts.	\$10.65	\$10.65	\$10.65	\$10.30	\$8.95

\*Including 0.35c for special quality.

SEMITINISHED STEEL	April 1	Week Ago	Month Ago	Year Ago	5 Yr Ago
Billets, forging, Pitts. (NT)	\$99.50	\$99.50	\$99.50	\$96.00	\$75.50
Wire rods $\frac{1}{2}$ - $\frac{3}{4}$ " Pitts. ...	6.40	6.40	6.40	6.15	4.525

PIG IRON, Gross Ton	April 1	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	\$67.00	\$67.00	\$67.00	\$67.00	\$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Phila.	70.41	70.41	70.41	70.41	59.66
No. 2 Fdry, Neville Island, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.91	60.18
No. 2 Fdry, Birm.	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm.) deld. Cin.	70.20	70.20	70.20	70.20	60.43
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton	245.00	245.00	245.00	245.00	200.00

+74-76% Mn, Duquesne, Pa.

## SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pittsburgh	\$36.50	\$38.50	\$44.50	\$33.50	\$25.50
No. 1 Heavy Melt, E. Pa...	36.00	38.00	40.00	38.50	22.00
No. 1 Heavy Melt, Chicago	38.50	41.50	42.50	31.00	26.00
No. 1 Heavy Melt, Valley	40.50	43.50	46.50	34.50	23.50
No. 1 Heavy Melt, Cleve.	36.50	39.50	42.50	31.50	20.50
No. 1 Heavy Melt, Buffalo	39.50	39.50	39.50	28.50	24.00
Rails, Rerolling, Chicago	60.50	62.50	62.50	54.50	34.50
No. 1 Cast, Chicago	47.50	48.50	48.50	41.50	36.00

## COKE, Net Ton

Beehive, Furn., Connslv.	\$15.00	\$15.00	\$15.00	\$15.25	\$14.75
Beehive, Fdry., Connslv.	18.25	18.25	18.25	18.25	18.75
Oven, Fdry., Milwaukee	32.00	32.00	32.00	30.50	25.25



<b>BARS, Reinforcing, Billet (To Fabricators)</b>	McK.Rks.(S.R.) L5 .14.50 McK.Rks.(D.R.) L5 .19.80 McK.Rks.(Staybolt) L5 20.95	<b>SHEETS, H.R.(14 Ga. &amp; Heavier) High-Strength, Low-Alloy</b>	<b>SHEETS, Cold-Rolled, High-Strength, Low-Alloy</b>	<b>SHEETS, Well Casing</b>
AlabamaCity, Ala. R2 .5.675	Aliquippa, Pa. J5 .7.525	Aliquippa, Pa. J5 .7.525	Aliquippa, Pa. J5 .9.275	Fontana, Calif. K1 .7.325
Atlanta, A11 .5.675	Ashland, Ky. A10 .7.525	Cleveland, J5 R2 .7.525	Cleveland, J5 R2 .9.275	
Birmingham, C15 .5.675	Cleveland, J5 R2 .7.525	Conshohocken, Pa. A3 .7.575	Ecorse, Mich. G5 .9.275	
Buffalo, R2 .5.675	Conshohocken, Pa. A3 .7.575	Ecorse, Mich. G5 .7.525	Fairless, Pa. U5 .9.325	
Cleveland, R2 .5.675	Fairfield, Ala. T2 .7.525	Fairfield, Ala. T2 .7.525	Fontana, Calif. K1 .10.40	
Ecorse, Mich. G5 .5.675	Fairless, Pa. U5 .7.575	Fairless, Pa. U5 .7.575	Gary, Ind. U5 .9.275	
Emeryville, Calif. J7 .6.425	Franklin, Pa. (3) F5 .5.575	Farrell, Pa. S3 .7.525	Ind. Harbor, Ind. I-2, Y1 9.275	
Fairfield, Ala. T2 .5.675	Franklin, Pa. (4) F5 .5.675	Fontana, Calif. K1 .8.25	Lackawanna(37) B2 .9.275	
Fairless, Pa. U5 .5.675	Franklin, Pa. (4) F5 .5.675	Gary, Ind. U5 .7.525	Pittsburgh, J5 .9.275	
Fontana, Calif. K1 .6.375	JerseyShore, Pa. (3) J8 .5.55	Ind. Harbor, Ind. I-2, Y1 7.525	SparrowsPoint(38) B2 .9.275	
Ft. Worth, Tex. (4) (26) T4 5.925	Marion, O. (3) P11 .5.575	Irvin, Pa. U5 .7.525	Warren, O. R2 .9.275	
Gary, Ind. U5 .5.675	Tonawanda(3) B12 .5.575	Lackawanna(35) B2 .7.525	Weirton, W. Va. W6 .9.275	
Houston, S5 .5.925	Tonawanda(4) B12 .6.10	Munhall, Pa. U5 .7.525	Youngstown, Y1 .9.275	
Ind. Harbor, Ind. I-2, Y1 5.675		Niles, O. S3 .7.525		
Johnstown, Pa. B2 .5.675		Pittsburgh, J5 .7.525		
Joliet, Ill. P22 .5.675		S. Chicago, Ill. U5, W14 7.525		
KansasCity, Mo. S5 .5.925		Sharon, Pa. S3 .7.525		
Kokomo, Ind. C16 .5.775		SparrowsPoint(36) B2 .7.525		
Lackawanna, N.Y. B2 .5.675		Warren, O. R2 .7.525		
LosAngeles B3 .6.375		Weirton, W. Va. W6 .7.525		
Madison, Ill. L1 .5.875		Youngstown U5, Y1 .7.525		
Milton, Pa. M18 .5.825				
Minnequa, Colo. C10 .6.125				
Niles, Calif. P1 .6.375				
Pittsburgh, Calif. C11 .6.375				
Pittsburgh J5 .5.675				
Portland, Oreg. O4 .6.425				
SandSprings, Okla. S5 .5.925				
Seattle, B3, N14 .6.425				
S. Chicago, Ill. R2, W14 5.675				
S. Duquesne, Pa. U5 .5.675				
S. SanFrancisco B3 .6.425				
SparrowsPoint, Md. B2 .5.675				
Sterling, Ill. (1) N15 .5.675				
Sterling, Ill. N15 .5.775				
Struthers, O. Y1 .5.675				
Tonawanda, N.Y. B12 .6.10				
Torrance, Calif. C11 .6.375				
Youngstown R2, U5 .5.675				
<b>BARS, Reinforcing, Billet (Fabricated; To Consumers)</b>				
Baltimore, B2 .7.42				
Boston, B2, U8 .8.15				
Chicago, U8 .7.41				
Cleveland, U8 .7.39				
Houston, S5 .7.60				
Johnstown, Pa. B2 .7.33				
KansasCity, Mo. S5 .7.60				
Lackawanna, N.Y. B2 .7.35				
Marion, O. P11 .6.70				
Newark, N.J. U8 .7.80				
Philadelphia, U8 .7.63				
Pittsburgh, J5, U8 .7.35				
SandSprings, Okla. S5 .7.60				
Seattle, B3, N14 .7.95				
SparrowsPt, Md. B2 .7.33				
St. Paul, U8 .8.17				
Williamsport, Pa. S19 .7.25				
<b>BARS, Wrought Iron</b>				
Economy, Pa. (S.R.) B14 14.90				
Economy, Pa. (D.R.) B14 18.55				
Economy (Staybolt) B14 19.00				

## SHEETS

### SHEETS, Hot-Rolled Steel (18 Gauge and Heavier)

Lackawanna, N.Y. B2 .5.10

Altenport, Pa. P7 .5.10

Aliquippa, Pa. J5 .5.10

Ashland, Ky. (8) A10 .5.10

Cleveland, J5, R2 .5.10

Conshohocken, Pa. A3 .5.15

Detroit(8) M1 .5.10

Ecorse, Mich. G5 .5.10

Fairfield, Ala. T2 .5.10

Fairless, Pa. U5 .5.15

Farrel, Pa. S3 .5.10

Fontana, Calif. K1 .5.825

Gary, Ind. U5 .5.10

Geneva, Utah C11 .5.20

Newport, Ky. A2 .5.10

Niles, O. M21, S3 .5.10

Pittsburgh, Calif. C11 .5.80

Pittsburgh J5 .5.10

Portsmouth, O. P12 .5.10

Riverdale, Ill. A1 .5.10

Sharon, Pa. S3 .5.10

S. Chicago, Ill. U5, W14 5.10

SparrowsPoint, Md. B2 .5.10

Sterling, Ill. (1) N15 .5.675

Struthers, O. Y1 .5.675

Tonawanda, N.Y. B12 .6.10

Torrance, Calif. C11 .6.375

Youngstown R2, U5 .5.675

**SHEETS, H.R. (19 Ga. & Lighter)**

Niles, O. M21, S3 .6.275

**SHEETS, H.R., Alloy**

Gary, Ind. U5 .8.40

Ind. Harbor, Ind. Y1 .8.40

Irvin, Pa. U5 .8.40

Munhall, Pa. U5 .8.40

Newport, Ky. A2 .8.40

Youngstown U5, Y1 .8.40

**SHEETS, H.R. (14 Ga. & Heavier)**

McK.Rks.(S.R.) L5 .14.50

McK.Rks.(D.R.) L5 .19.80

McK.Rks.(Staybolt) L5 20.95

**BARS, Rail Steel**

ChicagoHts. (3) C2, I-2 5.575

ChicagoHts. (4) (44) I-2 5.675

ChicagoHts. (4) C2 .5.675

Franklin, Pa. (3) F5 .5.575

Franklin, Pa. (4) F5 .5.675

JerseyShore, Pa. (3) J8 .5.55

Marion, O. (3) P11 .5.575

Tonawanda(3) B12 .5.575

Tonawanda(4) B12 .6.10

## SHEETS

### SHEETS, Hot-Rolled Steel (18 Gauge and Heavier)

Lackawanna, N.Y. B2 .5.10

Altenport, Pa. P7 .5.10

Aliquippa, Pa. J5 .5.10

Ashland, Ky. (8) A10 .5.10

Cleveland, J5, R2 .5.10

Conshohocken, Pa. A3 .5.15

Detroit(8) M1 .5.10

Ecorse, Mich. G5 .5.10

Fairfield, Ala. T2 .5.10

Fairless, Pa. U5 .5.15

Farrel, Pa. S3 .5.10

Fontana, Calif. K1 .5.825

Gary, Ind. U5 .5.10

Geneva, Utah C11 .5.20

Newport, Ky. A2 .5.10

Niles, O. M21, S3 .5.10

Pittsburgh, Calif. C11 .5.80

Pittsburgh J5 .5.10

Portsmouth, O. P12 .5.10

Riverdale, Ill. A1 .5.10

Sharon, Pa. S3 .5.10

S. Chicago, Ill. U5, W14 5.10

SparrowsPoint, Md. B2 .5.10

Sterling, Ill. (1) N15 .5.675

Struthers, O. Y1 .5.675

Tonawanda, N.Y. B12 .6.10

Torrance, Calif. C11 .6.375

Youngstown R2, U5 .5.675

**SHEETS, Hot-Rolled Ingot Iron  
(18 Gauge and Heavier)**

Ashland, Ky. (8) A10 .5.35

Cleveland, R2 .5.875

Conshohocken, Pa. A3 .5.875

Detroit, Ind. I-2 .5.875

Ind. Harbor, Ind. I-2, Y1 9.275

Irvin, Pa. U5 .5.875

Youngstown U5, Y1 .5.875

**SHEETS, Cold-Rolled Ingot Iron  
(18 Gauge and Heavier)**

Ashland, Ky. (8) A10 .5.35

Cleveland, R2 .5.875

Conshohocken, Pa. A3 .5.875

Detroit, Ind. I-2 .5.875

Ind. Harbor, Ind. I-2, Y1 9.275

Irvin, Pa. U5 .5.875

Youngstown U5, Y1 .5.875

**SHEETS, Hot-Rolled Ingot Iron  
(18 Gauge and Heavier)**

Ashland, Ky. (8) A10 .5.35

Cleveland, R2 .5.875

Conshohocken, Pa. A3 .5.875

Detroit, Ind. I-2 .5.875

Ind. Harbor, Ind. I-2, Y1 9.275

Irvin, Pa. U5 .5.875

Youngstown U5, Y1 .5.875

**SHEETS, Hot-Rolled Steel  
(Commercial Quality)**

AlabamaCity, Ala. R2 .6.275

Ashland, Ky. A10 .6.275

Canton, O. R2 .6.275

Fairfield, Ala. T2 .6.275

Gary, Ind. U5 .6.275

GraniteCity, Ill. G4 .6.275

Ind. Harbor, Ind. I-2 .6.275

Irvin, Pa. U5 .6.275

Kokomo, Ind. C16 .6.275

Mansfield, O. E6 .6.275

Middleton, O. A10 .6.275

Niles, O. M21, S3 .6.275

Youngstown, Y1 .6.275

**SHEETS, Culvert**

Cu Steel

Cu Fe

Ala. City, Ala. R2 .7.225

Ashland, Ky. A10 .7.225

Canton, O. R2 .7.225

Fairfield, T2 .7.225

Gary, Ind. U5 .7.225

GraniteCity, Ill. G4 .7.225

Ind. Harbor, Ind. I-2 .7.225

Irvin, Pa. U5 .7.225

Kokomo, Ind. C16 .7.225

Mansfield, O. E6 .7.225

Middleton, O. A10 .7.225

Niles, O. M21, S3 .7.225

Youngstown, Y1 .7.225

**SHEETS, Culvert—Pure Iron**

Ind. Harbor, Ind. I-2 .7.475

**SHEETS, Galvanized Steel  
Hot-Dipped**

Ala. City, Ala. R2 .6.875

Ashland, Ky. A10 .6.875

Canton, O. R2 .6.875

Dover, O. E6 .6.875

Follansbee, W. Va. F4 .6.875

Fairfield, Ala. T2 .6.875

Gary, Ind. U5 .6.875

GraniteCity, Ill. G4 .6.975

Ind. Harbor, Ind. I-2 .6.875

Irvin, Pa. U5 .6.875

Kokomo, Ind. C16 .6.975

Mansfield, O. E6 .6.975

Middleton, O. A10 .6.975

Niles, O. M21, S3 .6.975

Youngstown, Y1 .6.975

**SHEETS, Enclosed Steel**

Ashland, Ky. A10 .6.775

Cleveland, R2 .6.775

Fairfield, Ala. T2 .6.775

Gary, Ind. U5 .6.775

GraniteCity, Ill. G4 .6.775

Ind. Harbor, Ind. I-2 .6.775

Irvin, Pa. U5 .6.775

Kokomo, Ind. C16 .6.775

Mansfield, O. E6 .6.775

Middleton, O. A10 .6.775

Niles, O. M21, S3 .6.775

Youngstown, Y1 .6.775

**BLUED STOCK, 29 Gauge**

Dover, O. E6 .8.70

Follansbee, W. Va. F4 .8.70

Ind. Harbor, Ind. I-2 .8.70

## STRIP

### STRIP, Cold-Rolled Alloy

Weirton, W. Va. W6 . . . . . 10.80  
Youngstown Y1 . . . . . 10.80

### STRIP, Hot-Rolled Carbon

Boston T6 . . . . . 15.90  
Carnegie, Pa. S18 . . . . . 15.55  
Cleveland A7 . . . . . 15.55  
Dover, O. G6 . . . . . 15.55  
Farrell, Pa. S3 . . . . . 15.55  
Franklin Park, Ill. T6 . . . . . 15.55  
Harrison, N. J. C18 . . . . . 15.55  
Atlanta A11 . . . . . 15.10  
Bessemer, Ala. T2 . . . . . 5.10  
Birmingham C15 . . . . . 5.10  
Buffalo (27) R2 . . . . . 5.10  
Conshohocken, Pa. A3 . . . . . 5.15  
Detroit M1 . . . . . 5.10  
Ecorse, Mich. G5 . . . . . 5.10  
Fairfield, Ala. T2 . . . . . 5.10  
Farrell, Pa. S3 . . . . . 5.10  
Fontana, Calif. K1 . . . . . 5.825  
Gary, Ind. U5 . . . . . 5.10  
Ind. Harbor, Ind. I-2, Y1 . . . . . 5.10  
Johnstown, Pa. (25) B2 . . . . . 5.10  
Lackawanna, N. Y. (25) B2 . . . . . 5.10  
Los Angeles (25) B3 . . . . . 5.85  
Los Angeles C1 . . . . . 8.60  
Minnequa, Colo. C10 . . . . . 6.20  
Riverdale, Ill. A1 . . . . . 5.10  
San Francisco S7 . . . . . 6.60  
Seattle (25) B3 . . . . . 6.10  
Warren, O. R2 . . . . . 10.80  
Youngstown U5 . . . . . 5.10

### STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7 . . . . . 10.80  
Dearborn, Mich. S3 . . . . . 10.80  
Riverdale, Ill. A1 . . . . . 5.10  
San Francisco S7 . . . . . 6.60  
Seattle (25) B3 . . . . . 6.10  
Warren, O. R2 . . . . . 10.80  
Youngstown U5 . . . . . 5.10

### STRIP, Cold-Finished Spring Steel (Annealed)

Baltimore T6 . . . . . 0.40C 0.60C 0.80C 1.05C 1.35C  
Boston T6 . . . . . 9.50 10.70 12.90 15.90 18.85  
Bristol, Conn. W1 . . . . . 10.70 12.90 16.10 19.30  
Carnegie, Pa. S18 . . . . . 8.95 10.40 12.60 15.60 . . . . .  
Cleveland A7 . . . . . 8.95 10.40 12.60 15.60 18.55  
Dearborn, Mich. S3 . . . . . 9.05 10.50 12.70 . . . . .  
Detroit D2 . . . . . 9.05 10.50 12.70 15.70 . . . . .  
Dover, O. G6 . . . . . 8.95 10.40 12.60 15.60 18.55  
Evanston, Ill. M22 . . . . . 8.95 10.40 12.60 15.60 . . . . .  
Farrell, Pa. S3 . . . . . 8.95 10.40 12.60 15.60 18.55  
Fostoria, O. S1 . . . . . 10.05 10.40 12.60 15.60 . . . . .  
Franklin Park, Ill. T6 . . . . . 9.05 10.40 12.60 15.60 18.55  
Harrison, N. J. C18 . . . . . 12.90 16.10 19.30 . . . . .  
Indianapolis S41 . . . . . 9.10 10.55 12.60 15.60 18.55  
Los Angeles C1 . . . . . 11.15 12.60 14.80 17.80 . . . . .  
Los Angeles S41 . . . . . 11.15 12.60 14.80 . . . . .  
Lowellville, O. S3 . . . . . 8.40  
Newport, Ky. A2 . . . . . 8.40  
Sharon, Pa. A2, S3 . . . . . 8.40  
S. Chicago, Ill. W14 . . . . . 8.40  
Youngstown U5, Y1 . . . . . 8.40

### STRIP, Hot-Rolled Alloy

Carnegie, Pa. S18 . . . . . 8.40  
Farrell, Pa. S3 . . . . . 8.40  
Gary, Ind. U5 . . . . . 8.40  
Houston S5 . . . . . 8.65  
Ind. Harbor, Ind. Y1 . . . . . 8.40  
Kansas City, Mo. S5 . . . . . 8.65  
Los Angeles B3 . . . . . 9.60  
Lowellville, O. S3 . . . . . 8.40  
Newport, Ky. A2 . . . . . 8.40  
Sharon, Pa. A2, S3 . . . . . 8.40  
S. Chicago, Ill. W14 . . . . . 8.40  
Youngstown U5 . . . . . 8.40

### STRIP, Hot-Rolled High-Strength, Low-Alloy

Ashland, Ky. A10 . . . . . 7.575  
Bessemer, Ala. T2 . . . . . 7.575  
Conshohocken, Pa. A3 . . . . . 7.575  
Ecorse, Mich. G5 . . . . . 7.575  
Fairfield, Ala. T2 . . . . . 7.575  
Farrell, Pa. S3 . . . . . 7.575  
Gary, Ind. U5 . . . . . 7.575  
Ind. Harbor, Ind. I-2, Y1 . . . . . 7.575  
Lackawanna, N. Y. B2 . . . . . 7.575  
Los Angeles (25) B3 . . . . . 8.325  
Seattle (25) B3 . . . . . 8.575  
Sharon, Pa. S3 . . . . . 7.575  
S. Chicago, Ill. W14 . . . . . 7.575  
S. San Francisco (25) B3 . . . . . 8.325  
Sparrows Point, Md. B2 . . . . . 7.575  
Trenton, N. J. R5 . . . . . 7.575  
Warren, O. R2 . . . . . 7.575  
Weirton, W. Va. W6 . . . . . 7.575  
Youngstown U5, Y1 . . . . . 7.575

## TIN MILL PRODUCTS

### TIN PLATE, Electrolytic (Base Box)

0.25 lb \$9.10 \$9.35 \$9.75  
0.50 lb \$9.10 \$9.35 \$9.75  
0.75 lb \$9.10 \$9.35 \$9.75

### SPRING STEEL (Tempered)

Bristol, Conn. W1 . . . . . 18.85 22.95 27.80

### SPRING STEEL (Annealed)

Buffalo W12 . . . . . 18.85 . . . . .

### SPRING STEEL (Annealed)

Fostoria, O. S1 . . . . . 19.05 22.15 . . . . .

### SPRING STEEL (Annealed)

Franklin Park, Ill. T6 . . . . . 19.20 23.30 28.15

### SPRING STEEL (Annealed)

Harrison, N. J. C18 . . . . . 18.85 22.95 27.80

### SPRING STEEL (Annealed)

New York W3 . . . . . 18.85 22.95 27.80

### SPRING STEEL (Annealed)

Pawtucket, R. I. N8 . . . . . 9.50 10.70 12.90 15.90 18.85

### SPRING STEEL (Annealed)

Riverdale, Ill. A1 . . . . . 9.05 10.40 12.60 15.60 18.55

### SPRING STEEL (Annealed)

Rome, N. Y. (32) R6 . . . . . 8.95 10.40 12.60 15.60 18.55

### SPRING STEEL (Annealed)

Sharon, Pa. S3 . . . . . 8.95 10.40 12.60 15.60 18.55

### SPRING STEEL (Annealed)

Trenton, N. J. R5 . . . . . 10.70 12.90 15.90 18.85

### SPRING STEEL (Annealed)

Wallingford, Conn. W2 . . . . . 9.40 10.70 12.90 15.90 18.75

### SPRING STEEL (Annealed)

Warren, O. T5 . . . . . 8.95 10.40 12.60 15.60 18.55

### SPRING STEEL (Annealed)

Worcester, Mass. A7, T6 . . . . . 9.50 10.70 12.90 15.90 18.85

### SPRING STEEL (Annealed)

Youngstown S41 . . . . . 8.95 10.40 12.60 15.60 18.55

### SPRING STEEL (Annealed)

Up to 0.81-1.06-1.35C

### SPRING STEEL (Annealed)

Bristol, Conn. W1 . . . . . 18.85 22.95 27.80

### SPRING STEEL (Annealed)

Buffalo W12 . . . . . 18.85 . . . . .

### SPRING STEEL (Annealed)

Fostoria, O. S1 . . . . . 19.05 22.15 . . . . .

### SPRING STEEL (Annealed)

Franklin Park, Ill. T6 . . . . . 19.20 23.30 28.15

### SPRING STEEL (Annealed)

Harrison, N. J. C18 . . . . . 18.85 22.95 27.80

### SPRING STEEL (Annealed)

New York W3 . . . . . 18.85 22.95 27.80

### SPRING STEEL (Annealed)

Pawtucket, R. I. N8 . . . . . 9.50 10.70 12.90 15.90 18.85

### SPRING STEEL (Annealed)

Riverdale, Ill. A1 . . . . . 9.05 10.40 12.60 15.60 18.55

### SPRING STEEL (Annealed)

Rome, N. Y. (32) R6 . . . . . 8.95 10.70 12.90 15.90 18.85

### SPRING STEEL (Annealed)

Sharon, Pa. S3 . . . . . 8.95 10.70 12.90 15.90 18.85

### SPRING STEEL (Annealed)

Trenton, N. J. R5 . . . . . 10.70 12.90 15.90 18.85

### SPRING STEEL (Annealed)

Wallingford, Conn. W2 . . . . . 8.95 10.70 12.90 15.90 18.85

### SPRING STEEL (Annealed)

Warren, O. T5 . . . . . 8.95 10.70 12.90 15.90 18.85

### SPRING STEEL (Annealed)

Worcester, Mass. A7, T6 . . . . . 9.50 10.70 12.90 15.90 18.85

### SPRING STEEL (Annealed)

Youngstown S41 . . . . . 8.95 10.70 12.90 15.90 18.85

## SILICON STEEL

### C. R. COILS & CUT LENGTHS (22 Ga.)

	Fully Processed	Arma- ture	Elec- tric	Dyna- mo
(Semiprocessed 1/2c lower)	Field	ture		
BeechBottom, W. Va. W10	11.70	12.40	13.55	14.65
Brackenridge, Pa. A4		12.40	13.55	14.65
GraniteCity, Ill. G4	9.975*11.30*	12.00*	13.05*	
IndianaHarbor, Ind. I-2	9.875*11.20*	11.90*	13.05*	
Mansfield, O. E6	9.875*11.70	12.40	13.55	14.65
Newport, Ky. A2	9.875*11.70	12.40	13.55	
Niles, O. M21	9.875*11.70	12.40	13.55	14.65
Vandergrift, Pa. U5	9.875*11.70	12.40	13.55	14.65
Warren, O. R2	9.875*11.70	12.40	13.55	14.65
Zanesville, O. A10	11.70†	12.40	13.55	14.65

State

Vandergrift, Pa. U5 . . . . . 8.10

Mansfield, O. E6 . . . . . 8.10

Warren, O. R2 (Silicon Lowcore) . . . . . 8.10

SHEETS (22 Ga., coils & cut lengths) T-72 T-65 T-58 T-52

Fully Processed

(Semiprocessed 1/2c lower)

BeechBottom, W. Va. W10 . . . . . 15.70

Vandergrift, Pa. U5 . . . . . 15.70

Zanesville, O. A10 . . . . . 15.70

15.70†

\* Semiprocessed. † Fully processed only. ‡ Coils, annealed, semiprocessed 1/2c lower. †† Coils only.

### C.R. COILS & CUT LENGTHS (22 Ga.)

Grain Oriented

LENGTHS (22 Ga.) T-100 T-90 T-80 T-73 T-66 T-77

Brackenridge, Pa. A4 . . . . . 18.10

Butler, Pa. A10 . . . . . 19.70

19.70 20.20 20.70 20.70 15.70†

Vandergrift, Pa. U5 . . . . . 17.10

18.10 19.70 20.20 20.70 15.70

Warren, O. R2 . . . . . 15.70

16.30 16.80 17.85

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## WIRE, Cold-Rolled Flat

Anderson, Ind.	G6	12.35	Fairfield, Ala.	T2	9.54
Baltimore	T6	12.65	Houston	S5	10.85
Boston	T6	12.65	Jacksonville, Fla.	M8	9.64
Buffalo	W12	12.35	Johnstown, Pa.	B2	10.60
Chicago	W13	12.45	Joliet, Ill.	A7	9.54
Cleveland	A7	12.35	Kansas City, Mo.	S5	10.85
Crawfordsville, Ind.	M8	12.35	Kokomo, Ind.	C16	9.64
Dover, O.	G6	12.35	Los Angeles	B3	11.40
Farrell, Pa.	S3	12.35	Minnequa, Colo.	C10	10.85
Fostoria, O.	S1	12.35	Pittsburg, Calif.	C11	10.26
Franklin Park, Ill.	T6	12.45	S. Chicago, Ill.	R2	9.54
Kokomo, Ind.	C16	12.35	S. San Francisco	C10	11.40
Massillon, O.	R8	12.35	Sparrows Pt., Md.	B2	10.70
Milwaukee	C23	12.55	Sterling, Ill. (37)	N15	9.54
Monessen, Pa.	P7	12.35			
Palmer, Mass.	W12	12.65			
Pawtucket, R.I.	N8	11.95			
Philadelphia	P24	12.65			
Riverdale, Ill.	A1	12.45			
Rome, N.Y.	R6	12.35			
Sharon, Pa.	S3	12.35			
Trenton, N.J.	R5	12.65			
Warren, O.	B9	12.35			
Worcester, Mass.	A7, T6	12.65			

## Coil No. 6500 Interim

NAILS, Stock	Col.				
Alabama City, Ala.	R2	173	Fairfield, Ala.	T2	9.54
Albuquerque, Pa.	J5	173	Houston	S5	10.85
Atlanta	A11	175	Jacksonville, Fla.	M8	9.64
Bartonville, Ill.	K4	175	Johnstown, Pa.	B2	10.60
Chicago	W13	173	Joliet, Ill.	A7	9.54
Cleveland	A9	173	Kansas City, Mo.	S5	10.85
Crawfordsville, Ind.	M8	175	Kokomo, Ind.	C16	9.64
Donora, Pa.	A7	173	Los Angeles	B3	11.40
Duluth	A7	173	Minnequa, Colo.	C10	10.85
Fairfield, Ala.	T2	173	Pittsburg, Calif.	C11	10.26
Houston	S5	178	S. Chicago, Ill.	R2	9.54
Jacksonville, Fla.	M8	175	S. San Francisco	C10	11.45
Joliet, Ill.	A7	173	Sparrows Pt., Md.	B2	10.75
Kansas City, Mo.	S5	178	Sterling, Ill. (37)	N15	9.54
Kokomo, Ind.	C16	175			
Minnequa, Colo.	C10	178			
Monessen, Pa.	P7	173			
Pittsburg, Calif.	C11	192			
Rankin, Pa.	A7	173			
S. Chicago, Ill.	R2	173			
Sparrows Pt., Md.	B2	175			
Sterling, Ill. (7)	N15	175			
Worcester, Mass.	A7	179			
(To Wholesalers; per cwt.)					
Galveston, Tex.	D7	\$10.30			

NAILS, Cut (100 lb keg)					
To Dealers (33)					
Wheeling, W. Va.	W10	\$9.80			

POLISHED STAPLES	Col.				
Alabama City, Ala.	R2	175	Kansas City, Mo.	S5	217
Albuquerque, Pa.	J5	173	Kokomo, Ind.	C16	214
Atlanta	A11	177	Bartonville, Ill.	K4	217
Bartonville, Ill.	K4	175	Crawfordsville, Ind.	M8	217
Donora, Pa.	A7	173	Duluth	A7	217
Duluth	A7	173	Franklin, Pa.	F5	217
Fairfield, Ala.	T2	173	Houston	S5	217
Houston	S5	180	Jacksonville, Fla.	M8	214
Jacksonville, Fla.	M8	177	Joliet, Ill.	A7	212
Kansas City, Mo.	S5	180	Kansas City, Mo.	S5	217
Kokomo, Ind.	C16	177	Minnequa, Colo.	C10	217
Minnequa, Colo.	C10	180	Pittsburg, Calif.	C11	236
Pittsburg, Calif.	C11	194	S. San Francisco	C10	236
Rankin, Pa.	A7	173	Sparrows Pt., Md.	B2	214
S. Chicago, Ill.	R2	175	Sterling, Ill. (7)	N15	215
Worcester, Mass.	A7	181	Worcester, Mass.	A7	217

(To Wholesalers; per cwt.)					
Galveston, Tex.	D7	\$10.30			

NAILS, Cut (100 lb keg)					
To Dealers (33)					
Wheeling, W. Va.	W10	\$9.80			

POLISHED STAPLES	Col.				
Alabama City, Ala.	R2	175	Kansas City, Mo.	S5	217
Albuquerque, Pa.	J5	173	Kokomo, Ind.	C16	214
Atlanta	A11	177	Bartonville, Ill.	K4	217
Bartonville, Ill.	K4	175	Crawfordsville, Ind.	M8	217
Donora, Pa.	A7	173	Duluth	A7	217
Duluth	A7	173	Franklin, Pa.	F5	217
Fairfield, Ala.	T2	173	Houston	S5	217
Houston	S5	180	Jacksonville, Fla.	M8	214
Jacksonville, Fla.	M8	177	Joliet, Ill.	A7	212
Kansas City, Mo.	S5	180	Kansas City, Mo.	S5	217
Kokomo, Ind.	C16	177	Minnequa, Colo.	C10	217
Minnequa, Colo.	C10	180	Pittsburg, Calif.	C11	236
Pittsburg, Calif.	C11	194	S. San Francisco	C10	236
Rankin, Pa.	A7	173	Sparrows Pt., Md.	B2	214
S. Chicago, Ill.	R2	175	Sterling, Ill. (7)	N15	215
Worcester, Mass.	A7	181	Worcester, Mass.	A7	217

TIE WIRE, Automatic Baler	(1 1/2 Ga.) (per 97 lb Net Box)				
Coil No. 3150					
Alabama City, Ala.	R2	\$9.24			
Atlanta	A11	10.36			
Bartonville, Ill.	K4	9.34			
Buffalo	W12	10.26			
Chicago	W13	9.24			
Crawfordsville, Ind.	M8	9.34			
Donora, Pa.	A7	9.24			
Duluth	A7	9.24			
Fairfield, Ala.	T2	9.24			
Houston	S5	10.51			
Jacksonville, Fla.	M8	9.34			
Joliet, Ill.	A7	9.24			
Kansas City, Mo.	S5	10.51			
Kokomo, Ind.	C16	9.34			
Los Angeles	B3	11.05			
Minnequa, Colo.	C10	10.51			
Pittsburg, Calif.	C11	9.94			
S. Chicago, Ill.	R2	9.24			
S. San Francisco	C10	11.04			
Sparrows Pt., Md.	B2	10.36			
Sterling, Ill. (37)	N15	9.24			

TIE WIRE, Automatic Baler	(1 1/2 Ga.) (per 97 lb Net Box)				
Coil No. 3150					
Alabama City, Ala.	R2	\$9.24			
Atlanta	A11	10.70			
Bartonville, Ill.	K4	9.64			
Buffalo	W12	10.60			
Chicago	W13	9.54			
Crawfordsville, Ind.	M8	9.64			
Donora, Pa.	A7	9.54			
Duluth	A7	9.54			
Fairfield, Ala.	T2	9.54			
Houston	S5	10.51			
Jacksonville, Fla.	M8	9.54			
Joliet, Ill.	A7	9.54			
Kansas City, Mo.	S5	10.51			
Kokomo, Ind.	C16	9.54			
Los Angeles	B3	11.05			
Minnequa, Colo.	C10	10.51			
Pittsburg, Calif.	C11	9.94			
S. Chicago, Ill.	R2	9.24			
S. San Francisco	C10	11.04			
Sparrows Pt., Md.	B2	10.36			
Sterling, Ill. (37)	N15	9.24			

Coil No. 6500 Stand.					
Alabama City, Ala.	R2	\$9.54			
Atlanta	A11	10.70			
Bartonville, Ill.	K4	9.64			
Buffalo	W12	10.60			
Chicago	W13	9.54			
Crawfordsville, Ind.	M8	9.64			
Donora, Pa.	A7	9.54			
Duluth	A7	9.54			
Fairfield, Ala.	T2	9.54			
Houston	S5	10.51			
Jacksonville, Fla.	M8	9.54			
Joliet, Ill.	A7	9.54			
Kansas City, Mo.	S5	10.51			
Kokomo, Ind.	C16	9.54			
Los Angeles	B3	11.05			
Minnequa, Colo.	C10	10.51			
Pittsburg, Calif.	C11	9.94			
S. Chicago, Ill.	R2	9.24			
S. San Francisco	C10	11.04			
Sparrows Pt., Md.	B2	10.36			
Sterling, Ill. (37)	N15	9.24			

Coil No. 6500 Stand.					
Alabama City, Ala.	R2	\$9.54			
Atlanta	A11	10.70			
Bartonville, Ill.	K4	9.64			
Buffalo	W12	10.60			
Chicago	W13	9.54			
Crawfordsville, Ind.	M8	9.64			
Donora, Pa.	A7	9.54			
Duluth	A7	9.54			
Fairfield, Ala.	T2	9.54			
Houston	S5	10.51			
Jacksonville, Fla.	M8	9.54			
Joliet, Ill.	A7	9.54			
Kansas City, Mo.	S5	10.51			
Kokomo, Ind.	C16	9.54			
Los Angeles	B3	11.05			
Minnequa, Colo.	C10	10.51			
Pittsburg, Calif.	C11	9.94			
S. Chicago, Ill.	R2	9.24			
S. San Francisco	C10	11.04			
Sparrows Pt., Md.	B2	10.36			
Sterling, Ill. (37)	N15	9.24			

Coil No. 6500 Stand.					
Alabama City, Ala.	R2	\$9.54			
Atlanta	A11	10.70			
Bartonville, Ill.	K4	9.64			
Buffalo	W12	10.60			
Chicago	W13	9.54			
Crawfordsville, Ind.	M8	9.64			
Donora, Pa.	A7	9.54			
Duluth	A7	9.54			
Fairfield, Ala.	T2	9.54			
Houston	S5	10.51			
Jacksonville, Fla.	M8	9.54			
Joliet, Ill.	A7	9.54			
Kansas City, Mo.	S5	10.51			
Kokomo, Ind.	C16	9.54			
Los Angeles	B3	11.05			
Minnequa, Colo.	C10	10.51			
Pittsburg, Calif.	C11	9.94			
S. Chicago, Ill.	R2	9.24			
S. San Francisco	C10	11.04			
Sparrows Pt., Md.	B2	10.36			
Sterling, Ill. (37)	N15	9.24			

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**SEAMLESS STANDARD PIPE, Threaded and Coupled**

Size—Inches	2	2½	3	3½	4	5	6
List Per Ft	37c	58.5c	76.5c	92c	\$1.09	\$1.48	\$1.92
Pounds Per Ft	3.68	5.82	7.62	9.20	10.89	14.81	19.18
Aliquippa, Pa. J5	+12.25	+27.25	+5.75 +22.5	+3.25 +20	+1.75 +18.5	+1.75 +18.5	0.5 +16.25
Ambridge, Pa. N2	+12.25	...	+5.75	+3.25	+1.75	+1.75	0.5 +16.25
Lorain, O. N3	+12.25	+27.25	+5.75 +22.5	+3.25 +20	+1.75 +18.5	+1.75 +18.5	0.5 +16.25
Youngstown Y1	+12.25	+27.25	+5.75 +22.5	+3.25 +20	+1.75 +18.5	+1.75 +18.5	0.5 +16.25

**ELECTRICWELD STANDARD PIPE, Threaded and Coupled**

Youngstown R2	+12.25 +27.25	+5.75 +22.5	+3.25 +20	+1.75 +18.5	+1.75 +18.5	+2	+18.75	0.5 +16.25
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**BUTTWELD STANDARD PIPE, Threaded and Coupled**

Size—Inches	1/8	1/4	3/8	1/2	5/8	3/4	1	1 1/4
List Per Ft	5.5c	6c	6c	8.5c	11.5c	17c	23c	22.28
Pounds Per Ft	0.24	0.42	0.57	0.85	1.13	1.68		
Aliquippa, Pa. J5	...	...	...	2.25 +13	5.25 +9	8.75 +4.5	11.25 +3.75	
Alton, Ill. L1	...	...	...	0.25 +15	3.25 +11	6.75 +6.5	9.25 +5.75	
Benwood, W. Va. W10	1.5 +25	+10.5 +34	+21	+42.5	2.25 +13	5.25 +9	8.75 +4.5	11.25 +3.75
Butler, Pa. F6	4.5 +22	+8.5 +32	+19.5	+41	...	...	...	...
Etna, Pa. N2	...	...	...	...	2.25 +13	5.25 +9	8.75 +4.5	11.25 +3.75
Fairless, Pa. N3	...	...	...	...	0.25 +15	3.25 +11	6.75 +6.5	9.25 +5.75
Fontana, Calif. K1	...	...	...	...	+10.75 +26	+7.75 +22	+4.25 +17.5	+1.75 +16.75
Indiana Harbor, Ind. Y1	...	...	...	...	1.25 +14	4.25 +10	7.75 +5.5	10.25 +6.25
Lorain, O. N3	...	...	...	...	2.25 +13	5.25 +9	8.75 +4.5	11.25 +3.75
Sharon, Pa. S4	4.5 +22	+8.5 +32	+19.5	+41	...	...	...	...
Sharon, Pa. M6	...	...	...	...	2.25 +13	5.25 +9	8.75 +4.5	11.25 +3.75
Sparks Pt., Md. B2	2.5 +24	+10.5 +34	+21.5	+43	0.25 +15	3.25 +11	6.75 +6.5	9.25 +5.75
Wheatland, Pa. W9	4.5 +22	+8.5 +32	+19.5	+41	2.25 +13	5.25 +9	8.75 +4.5	11.25 +3.75
Youngstown R2, Y1	...	...	...	...	2.25 +13	5.25 +9	8.75 +4.5	11.25 +3.75

Size—Inches	1 1/2	2	2 1/2	3	3 1/2	4
List Per Ft	27.5c	37c	53.5c	76.5c	92c	\$1.09
Pounds Per Ft	2.72	3.68	5.82	7.62	9.20	10.89
Aliquippa, Pa. J5	11.75 +2.75	12.25 +2.25	13.75 +2.5	13.75 +2.5	3.25 +13.5	3.25 +13.5
Alton, Ill. L1	9.75 +4.75	10.25 +4.25	11.75 +4.5	11.75 +4.5	1.25 +15.5	1.25 +15.5
Benwood, W. Va. W10	11.75 +2.75	12.25 +2.25	13.75 +2.5	13.75 +2.5	3.25 +13.5	3.25 +13.5
Etna, Pa. N2	11.75 +2.75	12.25 +2.25	13.75 +2.5	13.75 +2.5	3.25 +13.5	3.25 +13.5
Fairless, Pa. N3	9.75 +4.75	10.25 +4.25	11.75 +4.5	11.75 +5.5	1.25 +15.5	1.25 +15.5
Fontana, Calif. K1	+1.25 +15.75	+0.75 +15.25	0.75 +15.5	0.75 +15.5	+9.75 +26.5	+9.75 +26.5
Indiana Harbor, Ind. Y1	10.75 +3.75	11.25 +3.25	12.75 +3.5	12.25 +3.5	2.25 +14.5	2.25 +14.5
Lorain, O. N3	11.75 +2.75	12.25 +2.25	13.75 +2.5	13.75 +3.5	...	...
Sharon, Pa. M6	11.75 +2.75	12.25 +2.25	13.75 +2.5	13.75 +2.5	...	...
Sparks Pt., Md. B2	9.75 +4.75	10.25 +4.25	11.75 +4.5	11.75 +4.5	1.25 +15.5	1.25 +15.5
Wheatland, Pa. W9	11.75 +2.75	12.25 +2.25	13.75 +2.5	13.75 +2.5	3.25 +13.5	3.25 +13.5
Youngstown R2, Y1	11.75 +2.75	12.25 +2.25	13.75 +2.5	13.75 +2.5	3.25 +13.5	3.25 +13.5

\*Galvanized pipe discounts based on price of zinc at 11.00c, East St. Louis.

## Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling—		Forging Billets	H.R. Strip	H.R. C.F.	Bars; Structural Shapes	C.R. Strip; Flat	Plates				Sheets				
	Ingot	Slabs						Plates	Sheets	Wire	5%	10%	15%	20%	Carbon Base	Carbon Base
201	22.75	28.00	...	36.00	...	43.50	39.25	48.50	45.00	302	...	26.05	28.80	31.55	34.30	37.50
202	24.75	31.50	37.75	39.00	42.25	44.50	40.00	49.25	49.25	304	...	30.50	33.75	36.95	40.15	39.75
301	24.00	29.00	38.75	37.25	43.50	46.00	41.25	51.25	47.50	316	...	38.20	42.20	46.25	50.25	58.25
302	26.25	32.75	39.50	40.50	44.25	46.75	42.25	52.00	52.00	316L	...	42.30	46.75	51.20	55.65	...
302B	26.50	34.00	42.25	45.75	46.75	49.00	44.50	57.00	57.00	316 Cb	...	49.90	55.15	60.40	65.65	...
303	...	33.25	42.50	...	47.25	49.75	45.00	56.75	56.75	321	...	31.20	34.50	37.75	41.05	47.25
304	28.00	34.50	42.00	43.75	47.00	49.50	45.75	55.00	55.00	347	...	36.90	40.80	44.65	48.55	57.00
304L	...	49.75	51.50	54.50	57.25	62.75	62.75	62.75	62.75	405	...	22.25	24.60	26.90	29.25	...
305	29.50	38.25	44.00	47.50	47.00	49.50	46.25	58.75	58.75	410	...	20.55	22.70	24.85	27.00	...
308	32.00	39.75	49.00	50.25	54.75	57.75	55.25	63.00	63.00	430	...	21.20	23.45	25.65	27.90	...
309	41.25	51.25	60.00	64.50	66.25	69.50	66.00	80.50	80.50	Inconel	...	48.90	59.55	70.15	80.85	...
310	51.50	63.75	81.00	84.25	89.75	94.50	87.75	96.75	96.75	Nickel	...	41.85	51.95	63.30	72.70	...
314	...	80.50	...	89.75	94.50	94.50	87.75	96.75	96.75	Nickel, Low Carbon	...	41.95	52.60	63.30	74.15	...
316	41.25	51.25	64.50	68.50	71.75	75.75	71.75	80.75	80.75	Monel	...	43.35	53.55	63.80	74.05	...
316L	...	72.25	76.25	79.50	83.50	95.50	88.50	88.50	88.50	...	...	...	...	...	...	...
317	49.75	62.25	78.75	88.25	89.50	94.25	88.50	101.00	101.00	...	...	...	...	...	...	...
321	33.50	41.50	48.75	53.50	54.50	57.50	54.75	65.50	65.50	...	...	...	...	...	...	...
330	...	123.25	...	113.00	143.75	135.00	149.25	149.25	149.25	...	...	...	...	...	...	...
18-8 CbTa	38.50	48.25	57.75	63.50	63.75	67.25	64.75	79.25	79.25	...	...	...	...	...	...	...
403	...	29.25	...	33.25	35.00	35.00	30.00	40.25	40.25	...	...	...	...	...	...	...
405	20.25	26.50	30.75	36.00	34.75	36.50	32.50	46.75	46.75	...	...	...	...	...	...	...
410	17.50	22.25	29.25	31.00	33.25	35.00	30.00	40.25	40.25	...	...	...	...	...	...	...
416	...	29.75	...	33.75	35.50	35.50	31.25	48.25	48.25	...	...	...	...	...	...	...
420	...	34.75	35.50	41.75	40.75	42.75	40.25	62.00	62.00	...	...	...	...	...	...	...
430	17.75	22.50	29.75	32.00	33.75	35.50	31.00	40.75	40.75	...	...	...	...	...	...	...
430F	...	30.50	...	34.25	36.00	31.75	51.75	51.75	51.75	...	...	...	...	...	...	...
431	...	29.75	39.25	43.50	46.00	41.00	56.00	56.00	56.00	...	...	...	...	...	...	...
446	...	40.75	59.00	46.00	48.25	42.75	70.00	70.00	70.00	...	...	...	...	...	...	...

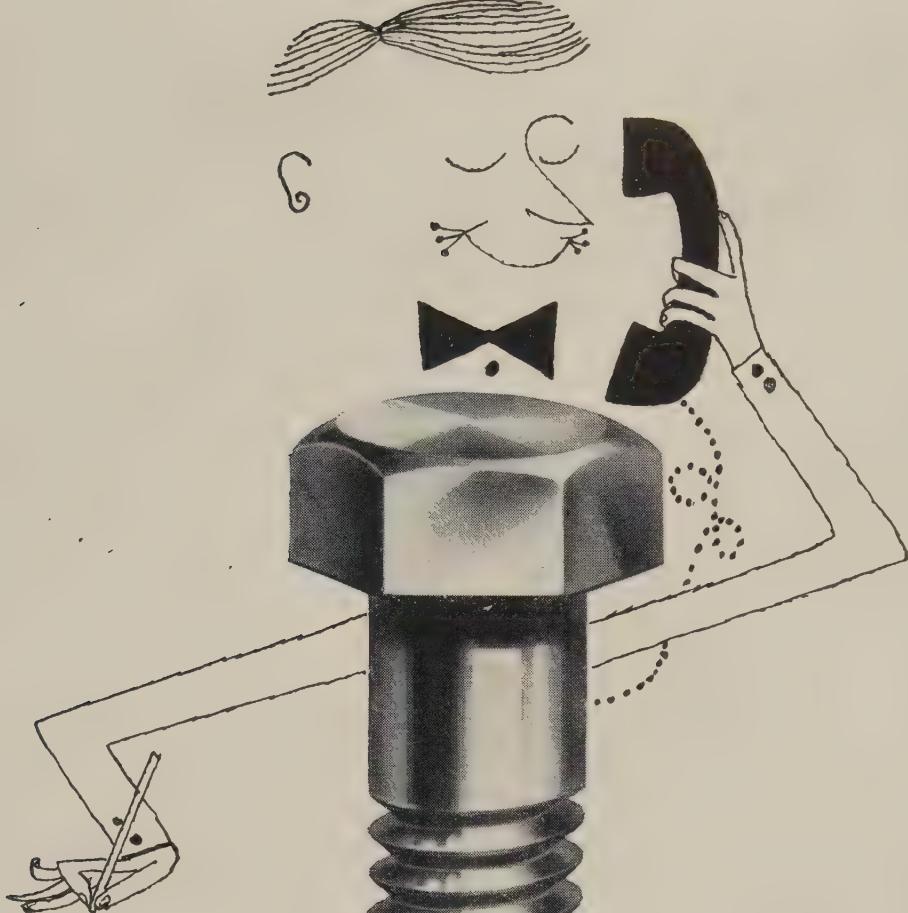
**Stainless Steel Producers Are:** Allegheny Ludlum Steel Corp.; American Steel & Wire Div.; U. S. Steel Corp.; Anchor Drawing Steel Co., division of Vanadium-Alloys Steel Co.; Armclo Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div.; Sharon Steel Corp.; Wilbur E. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div.; Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless & Strip Div.; Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div.; U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div.; American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riversdale-Alloy Metal Div.; H. K. Porter Company, Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulrich Stainless Steel Inc.; Union Steel Corp.; U. S. Steel Corp.; Universal Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel, subsidiary, Allegheny Ludlum Steel Corp.; Washington Steel Corp.; Seymour Mfg. Co.

## Clad Steel

Grade	\$ per lb	Grade	\$ per lb
Reg. Carbon (W-1)	0.330	W-Cr Hot Work (H-12)	0.530
Spec. Carbon (W-1)	0.385	W Hot Wk. (H-21)	1.425-1.44
Oil Hardening (O-1)	0.505	V-Cr Hot Work (H-13)	0.550
V-Cr Hot Work (H-11)	0.505	H1-Carbon-Cr (D-11)	0.955

—Grade by Analysis (%)—

W	Cr	V	Co	Mo	AISI Designation	\$ per lb
18	4	1	...	...	T-1	1.840
18	4	2	...	...	T-2	2.005
13.5	4	3	...	...	T-3	2.105
18.25	4.25	1	4.7			



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And, of course, Alcoa Aluminum Fasteners are a sound choice in *any* case. Bright, flawless finish adds extra appeal to your product at the time of purchase—

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# Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malle- able	Besse- mer		Basic	No. 2 Foundry	Malle- able	Besse- mer
<b>Birmingham District</b>									
Birmingham R2	62.00	62.50**	66.50	67.50	Duluth I-3	66.00	66.50	66.50	67.00
Birmingham U6	...	62.50**	66.50	67.50	Erle, Pa. I-3	66.00	66.50	66.50	67.00
Woodward, Ala. W15	62.00*	62.50**	66.50	67.50	Everett, Mass. E1	67.50	65.00	68.50	...
Cincinnati, deld.	...	70.20	...	...	Fontana, Calif. K1	75.00	75.50	...	...
<b>Buffalo District</b>					Geneva, Utah C11	66.00	66.50	...	...
Buffalo H1, R2	66.00	66.50	67.00	67.50	GraniteCity, Ill. G4	67.90	65.40	68.90	...
N. Tonawanda, N.Y. T9	...	66.50	67.00	67.50	Ironton, Utah C11	66.00	66.50	...	...
Tonawanda, N.Y. W12	66.00	66.50	67.00	67.50	Minnequa, Colo. C10	68.00	65.50	69.00	...
Boston, deld.	77.29	77.79	78.29	...	Rockwood, Tenn. T3	...	62.50*	66.50	...
Rochester, N.Y., deld.	69.02	69.52	70.02	...	Toledo, Ohio I-3	66.00	66.50	66.50	67.00
Syracuse, N.Y., deld.	70.12	70.62	71.12	...	Cincinnati, deld.	72.94	73.44	...	...
<b>Chicago District</b>									
Chicago I-3	66.00	66.50	66.50	67.00	*Phos. 0.70-0.90%; Phos. 0.30-0.69%, \$63.				
S. Chicago, Ill. R2	66.00	66.50	66.50	67.00	*Phos. 0.70-0.90%; Phos. 0.30-0.69%, \$63.50.				
S. Chicago, Ill. W14	66.00	...	66.50	67.00	†Phos. 0.50% up; Phos. 0.30-0.49, \$63.50.				
Milwaukee, deld.	69.02	69.52	69.52	70.02					
Muskegon, Mich., deld.	...	74.52	74.52	...					
<b>Cleveland District</b>									
Cleveland R2, A7	66.00	66.50	66.50	67.00					
Akron, Ohio, deld.	69.52	70.02	70.02	70.52					
<b>Mid-Atlantic District</b>									
Birdsboro, Pa. B10	68.00	68.50	69.00	69.50					
Chester, Pa. P4	68.00	68.50	69.00	69.50					
Swedeland, Pa. A3	68.00	68.50	69.00	69.50					
New York, deld.	...	75.50	76.00	...					
Newark, N.J., deld.	72.69	73.19	73.69	74.19					
Philadelphia, deld.	70.41	70.91	71.41	71.99					
Troy, N.Y. R2	68.00	68.50	69.00	69.50					
<b>Pittsburgh District</b>									
Neville Island, Pa. P6	66.00	66.50	66.50	67.00					
Pittsburgh (N&S sides), Aliquippa, deld.	...	67.95	67.95	68.48					
McKees Rocks, Pa., deld.	67.60	67.80	68.13						
Lawrenceville, Homestead, Wilmersding, Monaca, Pa., deld.	...	68.26	68.26	68.79					
Verona, Trafford, Pa., deld.	68.29	68.82	68.82	69.35					
Brackenridge, Pa., deld.	68.60	69.10	69.10	69.63					
Midland, Pa. C18	66.00	...	...	...					
<b>Youngstown District</b>									
Hubbard, Ohio Y1	...	68.50	...	...					
Sharpsville, Pa. S6	66.00	...	66.50	67.00					
Youngstown Y1	...	66.50	...	...					
Mansfield, Ohio, deld.	71.30	...	71.80	72.30					

## Steel Service Center Products

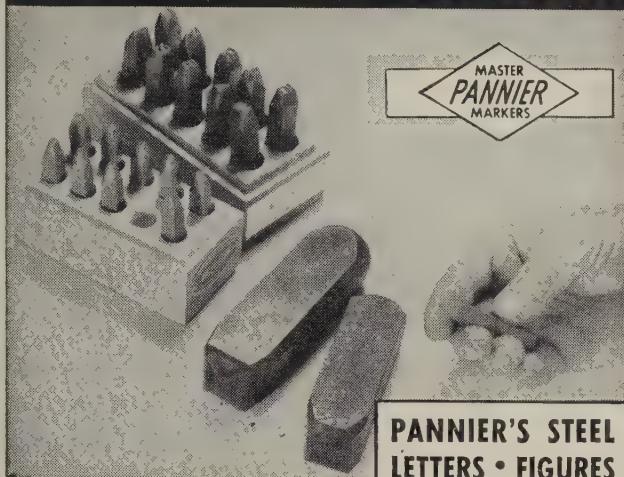
Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

Hot-Rolled	SHEETS		Stainless Type 302	Hot-Rolled*	STRIP		BARS		Standard Structural Shapes	PLATES	
	Cold-Rolled	Galv. 10 Ga.†			H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††§	H.R. Alloy 15.40		Carbon	Floor
Atlanta	8.59\$	9.86\$	10.13	...	8.91	9.39	13.24 #	...	9.40	9.29	11.21
Baltimore	8.55	9.25	9.99	...	9.05	9.45	11.85 #	15.48	9.55	9.00	10.50
Birmingham	8.18	9.45	10.46	...	8.51	8.99	...	...	9.00	8.89	10.90
Boston	9.31	10.40	11.97	53.50	9.73	10.11	13.39 #	15.71	10.01	10.02	11.85
Buffalo	8.40	9.60	10.85	55.98	8.75	9.15	11.45 #	15.40	9.25	9.20	10.75
Chattanooga	8.35	9.69	9.65	...	8.40	8.77	10.46	...	8.88	8.80	10.68
Chicago	8.25	9.45	10.50	53.00	8.51	8.99	9.15	15.05	9.00	8.89	10.20
Cincinnati	8.43	9.51	10.95	53.43	8.83	9.31	11.53 #	15.37	9.56	9.27	10.53
Cleveland	8.36	9.54	11.30	52.33	8.63	9.10	11.25 #	15.16	9.39	9.13	10.44
Dallas	8.80	9.30	...	...	8.85	8.80	...	...	8.75	9.15	10.40
Denver	9.40	11.84	12.94	...	9.43	9.80	11.19	...	9.84	9.76	11.08
Detroit	8.51	9.71	11.25	56.50	8.88	9.30	9.51	15.33	9.56	9.28	10.46
Erie, Pa.	8.35	9.45	9.95 <sup>10</sup>	...	8.60	9.10	11.25	...	9.35	9.10	10.60
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.60	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79	...	...	8.84	9.82	10.68	...	9.33	9.22	11.03
Los Angeles	8.70 <sup>2</sup>	10.80 <sup>2</sup>	12.15 <sup>2</sup>	57.60	9.15	9.10 <sup>2</sup>	12.95 <sup>2</sup>	16.35	9.00 <sup>2</sup>	9.10 <sup>2</sup>	11.30 <sup>2</sup>
Memphis, Tenn.	8.59	9.80	...	...	8.84	9.32	11.25 #	...	9.33	9.22	10.86
Milwaukee	8.39	9.59	11.04	...	8.65	9.13	9.39	15.19	9.22	9.03	10.34
Moline, Ill.	8.55	9.80	...	...	8.84	8.95	9.15	...	8.99	8.91	...
New York	9.17	10.49	11.30	53.08	9.64	9.99	13.25 #	15.50	9.74	9.77	11.06
Norfolk, Va.	8.65	...	...	...	9.15	9.30	12.75	...	9.65	9.10	10.50
Philadelphia	8.20	9.25	10.61	52.71	9.25	9.40	11.95 #	15.48	9.10	9.15	10.40 <sup>2</sup>
Pittsburgh	8.35	9.55	10.90	52.00	8.61	8.99	11.25 #	15.05	9.00	8.89	10.20
Richmond, Va.	8.65	...	10.79	...	9.15	9.55	...	...	9.65	9.10	10.60
St. Louis	8.63	9.83	11.28	...	8.89	9.37	9.78	15.43	9.48	9.27	10.58
St. Paul	8.79	10.04	11.49	...	8.84	9.21	9.86	...	9.38	9.30	10.49
San Francisco	9.65	11.10	11.40	55.10	9.75	10.15	13.00	16.00	9.85	10.00	12.35
Seattle	10.30	11.55	12.50	56.52	10.25	10.50	14.70	16.80 <sup>3</sup>	10.20	10.10	12.50
South'ton, Conn.	9.07	10.33	10.71	...	9.48	9.74	...	...	9.57	9.57	10.91
Spokane	10.35	11.55	12.55	57.38	10.80	11.05	14.70	16.80	10.25	10.15	13.05
Washington	9.15	...	...	...	9.65	10.05	12.50	...	10.15	9.60	11.10

\*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; \$42 in. and under; \*\*1/4 in. and heavier; §§ 1/4 in. to 4 in. wide, inclusive; # net price, 1 in. round C-1018.

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# Refractories

Fire Clay Brick (per 1000 pieces\*)

**High-Heat Duty:** Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwenville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., Canon City, Colo., \$140; Salina, Pa., \$145; Niles, Ohio, \$138; Cutler, Utah, \$175.

**Super-Duty:** Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, \$185; Stevens Pottery, Ga., \$195; Cutler, Utah, \$248.

Silica Brick (per 1000 pieces\*)

**Standard:** Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., St. Louis, \$158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., \$163; E. Chicago, Ind., Joliet, Rockdale, Ill., \$168; Canon City, Colo., \$173; Lehi, Utah, \$183; Los Angeles, \$185.

**Super-Duty:** Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., \$158; Morrisville, Hays, Latrobe, Pa., \$163; E. Chicago, Ind., St. Louis, \$168; Curtner, Calif., \$185; Canon City, Colo., \$183.

Semisilica Brick (per 1000 pieces\*)

Woodbridge, N. J., Canon City, Colo., \$140; Philadelphia, Clearfield, Pa., \$145.

Ladle Brick (per 1000 pieces\*)

**Dry Pressed:** Aley, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vaport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, \$96.75; Clearfield, Pa., Portsmouth, Ohio, \$102.

# Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted) Cents

Sponge Iron, domestic and foreign, 98% Fe:

Minimum trucklots, freight allowed east of

Mississippi River:

100 mesh, 100 lb bags ..... 11.25  
100 mesh, 100 lb pails ..... 9.10  
40 mesh, 100 lb bags ..... 8.10††

Electrolytic Iron, Melting stock, 99.87% Fe, irregular fragments of  $\frac{1}{8}$  in. x 1.3 in. ..... 28.75

(In contract lots of 240 tons price is 22.75c)

Annealed, 99.5% Fe... 36.50

Unannealed (99 + % Fe) ..... 36.00

Unannealed (99 + % Fe) (minus 325 mesh) ..... 59.00

Powder Flake (minus 16, plus 100 mesh) 29.00

Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh

Aluminum:	
Atomized, 500-lb drum, freight allowed	
Carlots ..... 38.50	
Ton lots ..... 40.50	
Antimony, 500-lb lots 42.00*	
Brass, 5000-lb lots ..... 34.40-50.90†	
Bronze, 5000-lb lots ..... 52.20-56.20†	
Copper:	
Electrolytic ..... 14.25*	
Reduced ..... 14.25*	
Lead ..... 7.50*	
Manganese, Electrolytic:	
Minus 50 mesh ..... 43.00	
Nickel ..... 80.60	
Nickel-Silver, 5000-lb lots ..... 52.80-57.20†	
Phosphor-Copper, 5000-lb lots ..... 64.60	
Copper (atomized) 5000-lb lots ..... 45.10-53.60†	
Solder ..... 7.00*	
Stainless Steel, 304 ..... \$0.89	
Stainless Steel, 316 ..... \$1.07	
Tin ..... 14.00*	
Zinc, 5000-lb lots 19.00-32.20†	
Tungsten:	Dollars
Carbon reduced, 98.8% min, minus 65 mesh ..... nom.**	8
1000 lb ..... 2.80	10
less 1000 lb ..... 2.95	12
Chromium, electrolytic 99.8% Cr, min metallic basis ..... 5.00	14

\*Plus cost of metal. †Depending on composition. †Depending on mesh. \$Cutting and scarfing grade. \*\*Depending on price of ore. ††Welding grade.

# Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305 ..	\$5.40	\$5.40	\$5.30	\$5.75
Bar Size Angles .....	5.10	5.10	5.00	5.43
Structural Angles .....	5.10	5.10	4.90	5.43
I-Beams .....	5.11	5.11	5.01	5.45
Channels .....	5.06	5.06	4.96	5.40
Plates (basic bessemer) .....	6.37	6.37	6.37	6.69
Sheets, H.R. .....	8.25	8.25	8.25	8.55
Sheets, C.R. (drawing quality) .....	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, $\frac{1}{2}$ x 0.30 lb per ft .....	25.76	25.64	25.64	26.51
Barbed Wire (†) .....	6.55	6.55	6.55	6.90
Merchant Bars .....	5.35	5.35	5.30	5.85
Hot-Rolled Bands .....	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5 .....	5.19	5.32	5.14	5.49
Wire Rods, O.H. Cold Heading Quality No. 5 .....	5.09	6.22	6.04	6.34
Bright Common Wire Nails (§) .....	7.85	7.75	7.67	8.20

\*Per 82 lb net reel. \$Per 100-lb kegs, 20d nails and heavier.

# Ores

## Lake Superior Iron Ore

(Prices effective at start of the 1959 shipping season, subject to later revision, gross ton, 51.50% iron natural, rail or vessel, lower lake ports.)

Mesabi bessemer .....	\$11.60
Mesabi nonbessemer .....	11.45
Old Range bessemer .....	11.85
Old Range nonbessemer .....	11.70
Open-hearth lump .....	12.70
High phos .....	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 1, 1959, and increases or decreases after that date are absorbed by the seller.

## Eastern Local Iron Ore

Cents per unit, del'd. E. Pa.

New Jersey, foundry and basic .....	62-64%
concentrates .....	nom.

## Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65% .....	23.00
N. African hematite (spot) .....	nom.
Brazilian iron ore, 68.5% .....	22.60

## Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality .....	\$10.75-11.00*
Domestic, concentrates f.o.b. milling points .....	16.00-17.00†

\*Before duty. †Nominal.

## Manganese Ore

Mn 46-48%, Indian (export tax included) \$0.915-\$0.965 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

## Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

## Indian and Rhodesian

48% 3:1 .....	\$42.00-44.00
48% 2.8:1 .....	38.00-40.00
48% no ratio .....	29.00-31.00

## South African Transvaal

44% no ratio .....	19.75-21.00
48% no ratio .....	29.00-31.00

## Turkish

48% 3:1 .....	51.00-55.00
Domestic	
Rail nearest seller .....	39.00

## Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked .....

\$1.23

## Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard	
50-55% .....	\$2.25-2.40
60-65% .....	2.50-3.10

## Vanadium Ore

Cents per lb V<sub>2</sub>O<sub>5</sub> .....

31.00

Domestic .....

Beehive Ovens Connellsburg, Pa., furnace .....

\$14.75-15.25

Connellsburg, Pa., foundry .....

18.00-18.50

## Oven Foundry Coke

Birmingham, ovens .....	\$30.35
Cincinnati, del'd. .....	33.34
Buffalo, ovens .....	32.00
Detroit, ovens .....	32.00

Pontiac, Mich., del'd. .....	33.95
Saginaw, Mich., del'd. .....	35.53

Erie, Pa., ovens .....	32.00
Everett, Mass., ovens:	

New England, del'd. .....	33.55*
---------------------------	--------

Indianapolis, ovens .....	31.25
Ironton, Ohio, ovens .....	30.50

Cincinnati, del'd. .....	33.54
Kearny, N. J., ovens .....	31.25

Milwaukee, ovens .....	32.00
Neville Island (Pittsburgh), Pa., ovens .....	30.75

Painesville, Ohio, ovens .....	32.00
Cleveland, del'd. .....	34.19

Philadelphia, ovens .....	31.00
St. Louis, ovens .....	33.00

St. Paul, ovens .....	31.25
Chicago, del'd. .....	34.73

Sweden, Pa., ovens .....	31.00
Terre Haute, Ind., ovens .....	31.25

\*Within \$5.15 freight zone from works.

# Coal Chemicals

(Representative prices)

Cents per gal. f.o.b. tank cars or tank trucks, plant.

Fure benzene .....

31.00

Xylene, industrial grade .....

29.00

Cresote .....

24.00

Naphthalene, 78 deg .....

5.00

Toluene, one deg (del. east of Rockies) .....

25.00

Cents per lb, f.o.b. tank cars or tank trucks, del.

Phenol, 90 per cent grade .....

15.50

Per net ton bulk, f.o.b. cars or trucks, plant

Ammonium sulfate, regular grade .....

\$32.00

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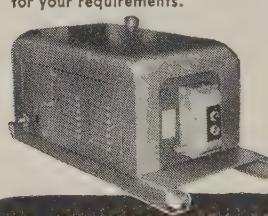
- **LONGER BLADES** with more bearing surface and rigid alignment eliminate side thrust and blade breakage.
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**A TRUE HYDRAULIC SYSTEM** with these efficient, maintenance-saving features:

- **CONTROL VALVE** big and accurate enough for all industrial work. Solenoid operated.
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- **PLUS** many other exclusive HKP features.

Ask to have a Porter Engineer tell you how the 3 CUTTERHEAD sizes and 5 HYDRAULIC POWER UNITS can provide the exact combination for your requirements.

OR — WRITE FOR COMPLETE  
PORTER HYDRAULIC ROD  
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**ATTENTION!** Production  
and Quality Control Depts.  
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**UPSET TESTING  
MACHINE!**

**H. K. PORTER, INC.** Somerville 43, Mass.

# Scrap Price Decline Is Unchecked

STEEL's composite on No. 1 heavy melting steel drops to \$37.00, off \$2.33 from the preceding week. Bottom of slump is not in sight. Mills aren't buying

Scrap Prices, Page 210

**Pittsburgh**—Prices are falling in an inactive market. Brokers bid \$42.60 to \$42.90 f.o.b. shipping point for Fisher Body Div.'s factory bundles (vs. \$49.50 a month ago). Major consumers are relying heavily on their blast furnaces, supplementing hot metal with home scrap and material returned by customers. Dealers say they'd rather pile scrap in their yards than try to process it for the prices consumers are willing to pay. Railroad lists are expected to drop sharply because of the tremendous tonnages being offered.

**Chicago**—The market is off another \$1 to \$2 a ton from last published quotations. Brokers report only nominal sales to mills. One reported sale of No. 1 heavy melting industrial scrap was made at

\$40. A broker said he'd sell material for \$37 if he could find a buyer. Normally, the spring weather should step up scrapyard activity. But inventories are bulging, and mills show no inclination to place large orders. The short term outlook: More price whittling.

**Philadelphia** — Scrap processors here say business doesn't look too good. Steel producers, they feel, have reached their planned limits on stockpiles. Demand is starting down as a result, and the drop is expected to continue through the third quarter.

Prices declined last week, No. 1 heavy melting falling to \$36, No. 2 heavy melting to \$30, No. 1 bundles to \$39, No. 2 bundles to \$24, No. 1 busheling to \$38, electric furnace bundles to \$41, mixed borings and turnings to \$22, short shoveling

turnings to \$25-\$26, machine shop turnings to \$20-\$21, heavy turnings to \$34-\$35, structurals and plates to \$43-\$44, couplers, springs, and wheels to \$43, rail crops to \$59-\$60.

**New York** — Despite high steel mill operations and good demand from abroad, steel scrap prices are easier. Mills appear to be drawing more on inventory than heretofore, possibly with the thought of working stocks down in case of a steel strike this summer. Another factor may be a seasonable improvement in the movement of yard scrap with milder weather at hand.

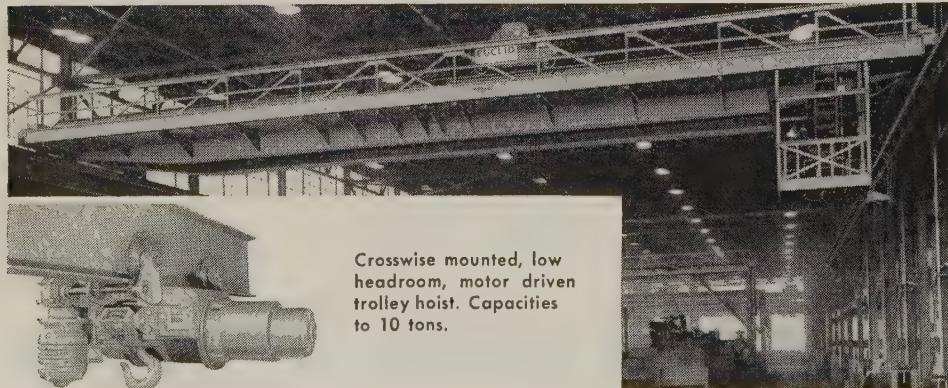
Brokers' buying prices are down \$1 a ton on No. 1 heavy melting and No. 1 bundles to \$28-\$29, and on No. 2 heavy melting to \$25-\$26. No change in No. 2 bundles is noted. Machine shop turnings are easier at \$11-\$12, mixed borings and turnings are \$14-\$15, and short shoveling turnings \$15-\$16, off \$1 a ton in each case. Low phos structurals and plates are steady.

Prices on stainless steel specialty scrap are also unchanged.

**Cleveland**—The market here and in the Valley is off about \$3 a ton,



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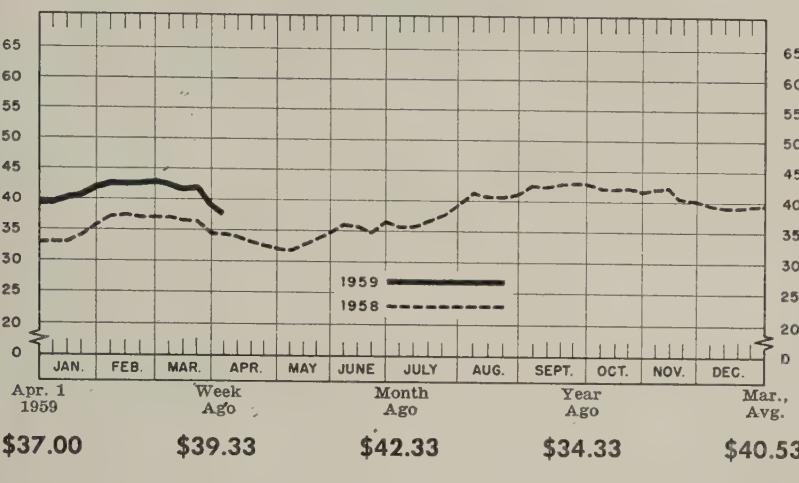


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## STEELMAKING SCRAP PRICE COMPOSITE

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania—Compiled by STEEL.



with No. 1 heavy melting quoted \$36-\$37 at Cleveland, and \$40-\$41 in the Valley. Weakness is general; in the absence of active mill demand, material is piling up in dealers' yards. Auto bundles are quoted \$40-\$41 here, off about \$7 from the month-ago price.

**Youngstown** — On the basis of sales in other leading consuming areas, scrap prices here have drifted lower. The last sale of No. 2 bundles here was at \$27. No. 1 heavy melting is nominally quoted around \$41. One local steelworks is charging 55 to 60 per cent hot metal in its open hearths.

**Buffalo** — The market appears headed for a decline of at least \$2 a ton on the leading steel grades and \$1 on turnings. Except for cast scrap, the market is leaning decidedly toward the offside. Dealers have been cutting their buying prices on the leading steel grades. But demand for cast remains strong, and prices are unchanged. There's said to be a shortage of cast because of heavy U. S. and Canadian demand.

**Detroit** — Prices are off further, following auto list closings last week. There's still no mill action, though Ford is reported to be paying \$32, delivered, for foundry steel. Prices have dropped an average of \$6 a ton in the last month. Most dealers and brokers feel they're close to the market bottom—that prices may shift \$2 a ton either way by the end of April.

**Cincinnati** — Prices on the principal grades of steelmaking scrap

are off another \$1 to \$2 a ton. Mill buying this month is expected to be below normal. Brokers are now offering \$35.50-\$36.50 for No. 1 heavy melting steel.

**St. Louis** — Prices on the open hearth grades continue to soften. The mills are not buying to any extent, high steelmaking operations being supported by hot metal and inventories. No. 1 heavy melting is off \$1 a ton to \$35, with No. 2 heavy melting quoted \$33, and No. 2 bundles \$26.

**Birmingham** — Although dealers anticipate some new mill buying this month, they'll not be surprised if the market drops lower. One or two mills have indicated they will return to the market, but the largest consumer of open hearth material apparently intends to depend on its stockpile. The movement of cast scrap is fair. The export market is quiet.

**Houston** — Brokers' buying prices for heavy melting grades are off \$2 a ton on a new 45 day purchase for a district mill. The order carried a \$2 springboard for scrap from areas requiring more than \$3.80 freight. No. 2 bundles were not included in the purchase. The turnings price held unchanged.

Another 45 day delivery order from a second Texas mill has been covered. The order expires Apr. 30.

Western Gulf export buying is slow. Mexican buying plans are undetermined, but there's talk that south-of-the-border offers will be at sharply reduced levels.

**Los Angeles** — The market is

steady, bolstered by Japanese commitments that are expected to total around 1 million tons, much of which will be collected on the Pacific Coast during the next six months.

**Seattle** — Export activity is adding strength to the local scrap market. For the second time in recent weeks, prices on the chief steelmaking grades have advanced. No. 1 heavy melting is quoted at \$35 and No. 2 heavy melting at \$33.

Japan is reported to have purchased five cargoes for shipment from Pacific Coast ports within three months. The strength has not spread to bundles, which are in plentiful supply.

Domestic buying has not increased, and the mills are still carrying large inventories.

**San Francisco** — While the mills hold plentiful supplies of scrap, they are being gradually reduced. The buoyant factor in the market is provided by exports. Some purchases on foreign account are being made above the domestic price level.

## Pig Iron . . .

Pig Iron Prices, Page 204

Merchant pig iron bookings in March were the heaviest for any month so far this year. Demand is far from brisk, however. Some observers predict that a mounting shortage of cast scrap may force foundries to come into the iron market on a much larger scale in the second quarter.

Foundries have been using a high percentage of cast scrap in their melts because it is cheaper than iron. Supplies of cast scrap are beginning to dry up in many districts, indicating that foundries will be forced to increase the ratio of pig in their melts.

This could result in much better demand for foundry iron in the second quarter, coupled with a desire of foundries to turn out as much tonnage as possible prior to the threatened July 1 steel strike.

The situation of domestic sellers is complicated by offerings of foreign iron at prices well below the domestic market. About 3000 tons of Spanish iron and 6000 tons of Indian iron arrived recently on the East Coast. A fairly substantial tonnage of West German iron is reportedly en route to this country.

(Please turn to Page 215)

# Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL April 1, 1959, Changes shown in italics.

## STEELMAKING SCRAP COMPOSITE

Apr. 1	\$37.00
Mar. 25	39.33
Mar. Avg.	40.40
Apr. 1958	33.08
Apr. 1954	25.67

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

## PITTSBURGH

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	33.00-34.00
No. 1 dealer bundles	39.00-40.00
No. 2 bundles	26.00-27.00
No. 1 busheling	38.00-39.00
No. 1 factory bundles	46.00-47.00
Machine shop turnings	22.00-23.00
Mixed borings, turnings	22.00-23.00
Short shovel turnings	25.00-26.00
Cast iron borings	25.00-26.00
Cut structurals:	
2 ft and under	48.00-49.00
3 ft lengths	47.00-48.00
Heavy turnings	34.00-35.00
Punchings & plate scrap	49.00-50.00
Electric furnace bundles	49.00-50.00

### Cast Iron Grades

No. 1 cupola	45.00-46.00
Stove plate	41.00-42.00
Unstripped motor blocks	31.00-32.00
Clean auto cast	39.00-40.00
Drop broken machinery	51.00-52.00

### Railroad Scrap

No. 1 R.R. heavy melt	39.00-40.00
Rails, 2 ft and under	58.00-59.00
Rails, 18 in. and under	59.00-60.00
Random rails	55.00-56.00
Railroad specialties	51.00-52.00
Angles, splice bars	51.00-52.00
Rails, rerolling	61.00-62.00

### Stainless Steel Scrap

18-8 bundles & solids	.225.00-230.00
18-8 turnings	.120.00-125.00
430 bundles & solids	.125.00-130.00
430 turnings	.55.00-65.00

## CHICAGO

No. 1 hvy melt, indus.	39.00-40.00
No. 1 hvy melt, dealer	37.00-39.00
No. 2 heavy melting	34.00-35.00
No. 1 factory bundles	42.00-43.00
No. 1 dealer bundles	39.00-40.00
No. 2 bundles	27.00-28.00
No. 1 busheling, indus.	39.00-40.00
No. 1 busheling, dealer	37.00-39.00
Machine shop turnings	20.00-21.00
Mixed borings, turnings	22.00-23.00
Short shovel turnings	22.00-23.00
Cast iron borings	22.00-23.00
Cut structurals, 3 ft	44.00-45.00
Punchings & plate scrap	45.00-46.00

### Cast Iron Grades

No. 1 cupola	47.00-48.00
Stove plate	43.00-44.00
Unstripped motor blocks	37.00-38.00
Clean auto cast	54.00-55.00
Drop broken machinery	54.00-55.00

### Railroad Scrap

No. 1 R.R. heavy melt	43.00-44.00
R.R. malleable	56.00-57.00
Rails, 2 ft and under	55.00-56.00
Rails, 18 in. and under	56.00-57.00
Angles, splice bars	51.00-52.00
Axes	69.00-70.00
Rails, rerolling	60.00-61.00

### Stainless Steel Scrap

18-8 bundles & solids	.215.00-225.00
18-8 turnings	.120.00-125.00
430 bundles & solids	.115.00-120.00
430 turnings	.55.00-60.00

## YOUNGSTOWN

No. 1 heavy melting	40.00-41.00
No. 2 heavy melting	28.00-29.00
No. 1 busheling	40.00-41.00
No. 1 bundles	40.00-41.00
No. 2 bundles	25.00-26.00
Machine shop turnings	17.00-18.00
Short shovel turnings	22.00-23.00
Cast iron borings	22.00-23.00
Low phos.	45.00-46.00
Electric furnace bundles	41.00-42.00

### Railroad Scrap

No. 1 R.R. heavy melt.	40.00-41.00
------------------------	-------------

## CLEVELAND

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	24.00-25.00
No. 1 factory bundles	40.00-41.00
No. 1 bundles	36.00-37.00
No. 2 bundles	24.00-25.00
No. 1 busheling	36.00-37.00
Machine shop turnings	14.00-15.00
Short shovel turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Cast iron borings	20.00-21.00
Cut foundry steel	37.00-38.00
Cut structurals, plates	2 ft and under
Low phos, punchings & plate	44.00-45.00

## PHILADELPHIA

No. 1 heavy melting	36.00
No. 2 heavy melting	30.00
No. 1 bundles	39.00
No. 2 bundles	24.00
No. 1 busheling	38.00
Electric furnace bundles	41.00
Mixed borings, turnings	22.00
Short shovel turnings	25.00-26.00
Machine shop turnings	20.00-21.00
Heavy turnings	34.00-35.00
Structurals & plate	43.00-44.00
Couplers, springs, wheels	43.00
Rail crops, 2 ft & under	59.00-60.00

### Cast Iron Grades

No. 1 cupola	41.00
Heavy breakable cast.	43.00
Drop broken machinery	49.00-50.00
Malleable	68.00

### Cast Iron Grades

No. 1 heavy melting	28.00-29.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	28.00-29.00
No. 2 bundles	18.00-19.00
Machine shop turnings	11.00-12.00

No. 1 heavy melting	36.00-37.00
Unstripped motor blocks	24.00-25.00
Heavy breakable	34.00-35.00
Stainless Steel	

No. 1 cupola	36.00-37.00
Unstripped motor blocks	24.00-25.00
Heavy breakable	34.00-35.00
Stainless Steel	

No. 1 heavy melting	36.00-37.00
Unstripped motor blocks	24.00-25.00
Heavy breakable	34.00-35.00
Stainless Steel	

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Heavy breakable	34.00-35.00
Stainless Steel	

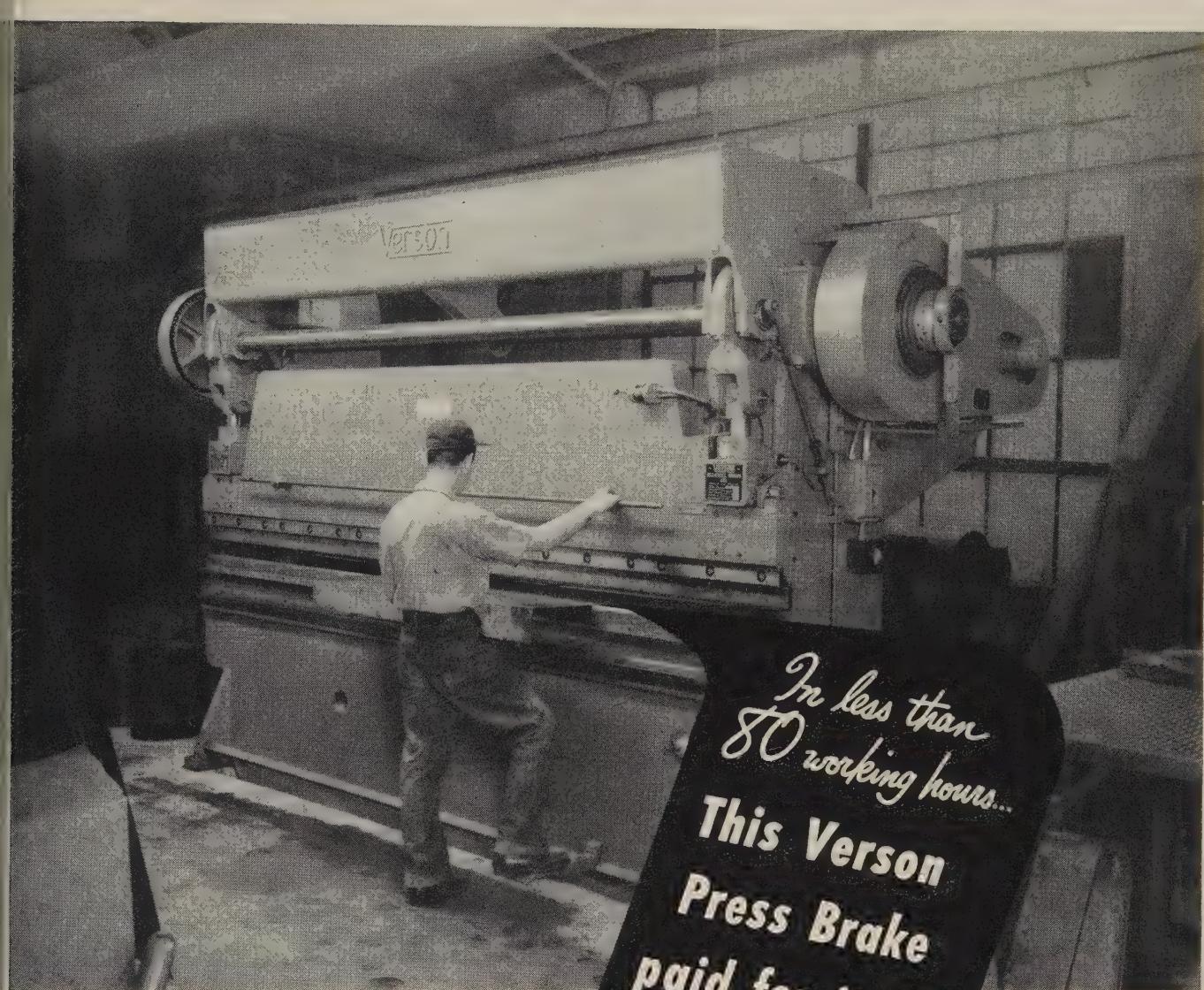
No. 1 heavy melting	36.00-37.00
Unstripped motor blocks	24.00-25.00
Heavy breakable	34.00-35.00
Stainless Steel	

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Stainless Steel	

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Unstripped motor blocks	24.00-25.00
Heavy breakable	34.00-35.00
Stainless Steel	

No. 1 heavy melting	36.00-37.00


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Add Chicago Dryer Company, Chicago, Illinois, to the ever-growing list of satisfied Verson Press Brake owners. In the manufacture of "America's most complete line of commercial flatwork ironers", Chicago Dryer Company uses this Verson No. 2010 Intermediate Series Press Brake to form flatwork ironer end frames from 5' lengths of 11 ga. mild steel. Two bends are made, utilizing the Verson Press Brake handled by two operators. In the past, this job required six men working with a hand brake.

Two trays are furnished with each of fifteen flatwork ironer models manufactured. Formed from 12' lengths of 16 ga. mild steel, the trays were formerly fabricated by an outside source.

*In less than  
80 working hours...*  
**This Verson  
Press Brake  
paid for itself**

Carrying an inventory ranging from 5 to 25 trays for each of fifteen ironer models was necessary. Using the Verson Press Brake, trays are now formed as needed, eliminating inventory and reducing the cost per piece.

Although this Verson Brake has been operated only 80 working hours since installation, Chicago Dryer Company reports the machine has already paid for itself in labor savings, convenience and increased production.

A Verson Press Brake may be the answer to your metal forming problems. It costs nothing to investigate. Call or write, today.

A Verson Press for every job from 60 tons up.

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# Ask Lead-Zinc Help

Several bills to aid domestic industry have been sponsored in Congress and more will probably come. Chances for passage are slim. Lead price down to 11 cents

Nonferrous Metal Prices, Pages 214 & 215

WINTER is officially over. That perennial harbinger of spring, the plea for aid to the domestic lead and zinc industry, is back. But the tune is familiar. Only the titles are different.

• **In the Hopper**—Two bills have been presented to the Senate. The first, sponsored by Sen. James E. Murray (D., Mont.), is aimed at supporting the domestic prices at 15.5 cents a pound for lead and 13.5 cents for zinc. It would give the secretary of commerce authority to hold down imports so the prices could be maintained. If adopted, the measure would mean another cut in the amount of foreign origin lead and zinc that can be brought into the U. S.

The second bill would grant a subsidy to producers on limited amounts of the two metals. Sponsored by Sen. Gordon Allott (R., Colo.), it would authorize payment to producers of the difference between the market price and a price of 16 cents a pound for lead and 13.5 cents for zinc for a one year period. But payment would be confined to 500 tons of lead and zinc per quarter for any one producer.

Senator Allott says his bill is designed to give "immediate and temporary relief to our small lead and zinc miners who are still in trouble. Production payments will primarily assist the 90 per cent of our lead-zinc producers who in 1956 produced about 16 per cent of our output."

• **More Coming**—Look for more bills calling for increased government aid to lead and zinc to appear in the next few weeks, say Capitol Hill prognosticators. One indication: Reliable reports have it that the Senate Interior Committee will

hold hearings on both metals around the middle of May. Some leading Democrats are convinced import quotas are not working.

• **Overstated**—Many nonferrous people believe the senators are perhaps making the situation out to be a little more serious than it is. No one will deny the quota pro-

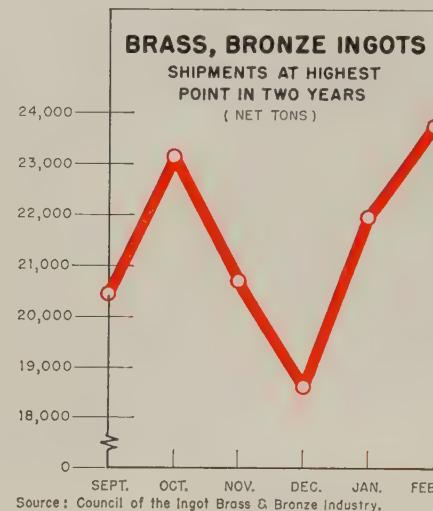
year as the metal already brought in disappears from the market.

Senator Allott backs this viewpoint: "Unless hearings indicate there is no possibility for the lead-zinc picture to improve, we should give the present quota program a full trial with only this limited and temporary program being offered to help our small miners."

• **Chances**—Don't look for Congress to be much impressed by any pleas mine state senators may make. Legislators have been unwilling to pass any of the numerous bills calling for subsidies or higher tariffs, and there's no reason to believe they'll have a change of heart in this session. It will be especially tough to push through any legislation with business on the rise. Lead sales are expected to go up 5 to 10 per cent this year; zinc sales may show a 10 to 20 per cent improvement. (See STEEL, Mar. 30, p. 39.)

• **Still Flimsy**—The business being done in both metals leaves a lot to be desired. Take lead: Though demand has picked up a bit, it's still frail. A price drop in Canada and weakness on the London Metal Exchange triggered a 0.5 cent drop in the domestic price to 11 cents a pound on Apr. 1. The price outlook depends on how well customers respond to the new quotation.

Zinc sales are a little better, although still slow. Galvanizers have been more active in ordering lately; diecasters are still shy about buying. The price looks stable.



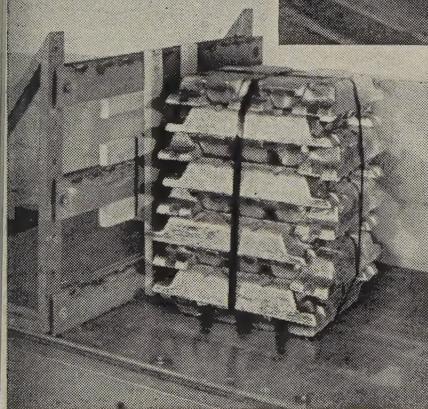
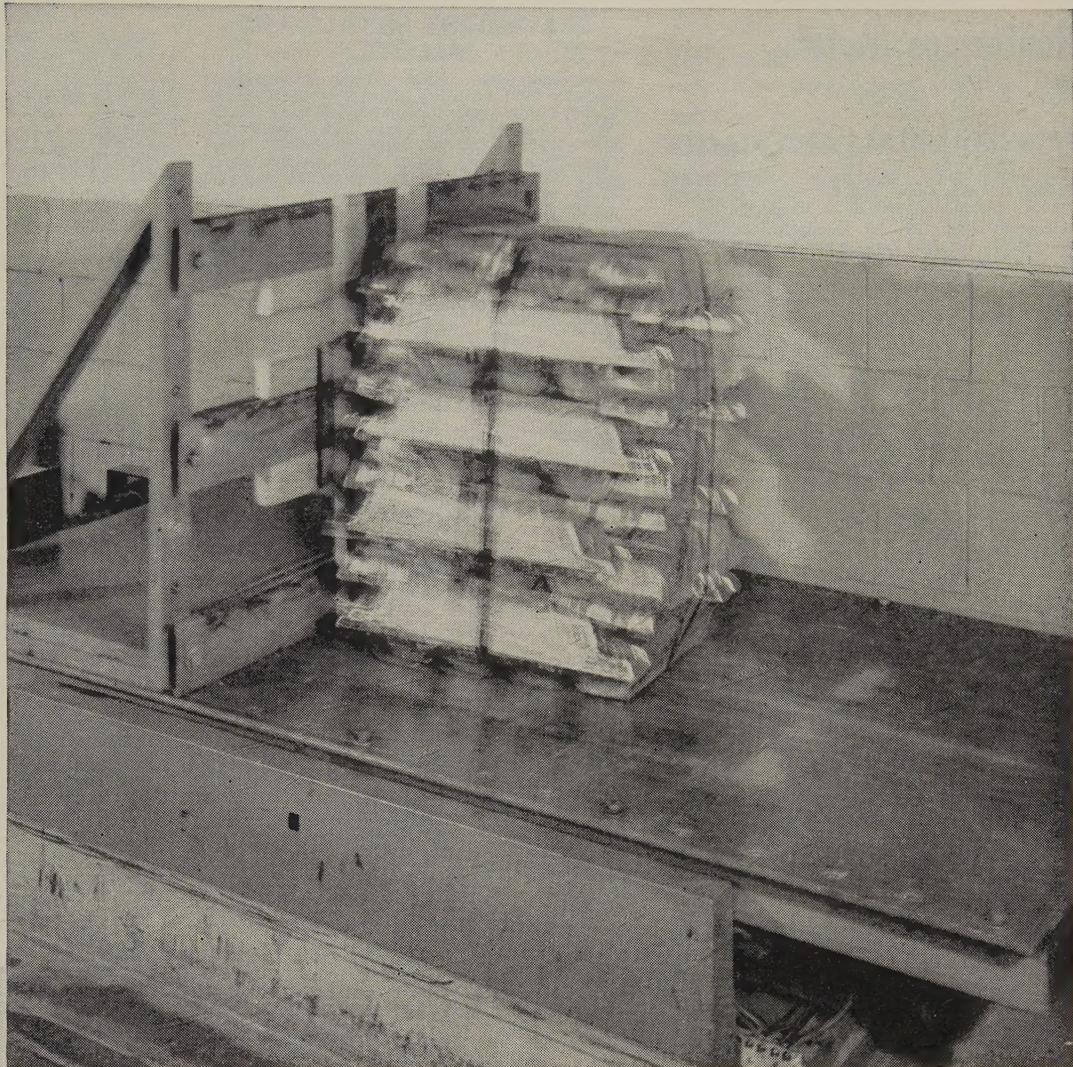
gram has been only partially successful, that barter is of virtually no benefit, and that the market for both metals is none too strong. But most observers believe quotas will become fairly effective later in the

## NONFERROUS PRICE RECORD

	Price Apr. 1	Last Change	Previous Price	Mar. Avg	Feb. Avg	Apr., 1958 Avg
Aluminum .	24.70	Aug. 1, 1958	24.00	24.700	24.700	24.000
Copper ....	31.50-34.00	Mar. 16, 1959	31.50-32.00	32.031	30.159	24.323
Lead .....	10.80	Apr. 1, 1959	11.30	11.238	11.368	11.800
Magnesium .	35.25	Aug. 13, 1958	33.75	35.250	35.250	35.250
Nickel .....	74.00	Dec. 6, 1958	64.50	74.000	74.000	74.000
Tin .....	102.625	Apr. 1, 1959	102.50	103.000	102.364	93.021
Zinc .....	11.00	Feb. 25, 1959	11.50	11.000	11.409	10.000

Quotations in cents per pound based on: COPPER, mean of primary and secondary, del'd. Conn. Valley; LEAD, common grade, del'd. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, del'd. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

Vibration test of  
ingot bundle. Signode  
vibrator handles up to  
3 tons at accelerations over one G.



After test, equivalent to the effect of  
expected actual handling and transit, the  
bundle still looked like this.

## Shake well before shipping!

A neat 2,300 pound bundle of aluminum ingots becomes 44 ingots trying desperately to go their separate ways...driven by the joggles and jolts of the vibration tester in the Signode Packaging Laboratory. The ingots hold together, though. They're bound to...by 51 cents worth of steel strapping pulled to about 3,000 pounds tension. We don't know of another material that could do this job at all...let alone at such low cost. And consider the savings of having Signode find out *in advance* and at no cost to you how to make your product behave in transit. This is one more way Signode helps make things cost less to handle, store, ship, and receive. For further information, talk to the Signode man near you, or write:



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# Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

## PRIMARY METALS AND ALLOYS

**Aluminum:** 99.5%, pigs 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

**Aluminum Alloy:** No. 13, 28.60; No. 43, 28.40; No. 195, 29.40; No. 214, 30.20; No. 356, 28.60; 30 or 40 lb ingots.

**Antimony:** R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 24.50-25.00, New York, duty paid, 10,000 lb or more.

**Beryllium:** 97% lump or beads, \$71.50 per lb, f.o.b. Cleveland or Reading, Pa.

**Beryllium Aluminum:** 5% Be, \$74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

**Beryllium Copper:** 3.75-4.75% Be, \$43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

**Bismuth:** \$2.25 per lb, ton lots.

**Cadmium:** Sticks and bars, \$1.45 per lb del'd.

**Cobalt:** 97.99%, \$1.75 per lb for 500-lb keg; \$1.77 per lb for 100 lb case; \$1.82 per lb under 100 lb.

**Columbium:** Powder, \$55-85 per lb, nom.

**Copper:** Electrolytic, 31.50 del'd.; custom smelters, 34.00; lake, 31.50 del'd.; fire refined, 31.25 del'd.

**Germanium:** First reduction, less than 1 kg, 41.00 per gram; 1-10 kg, 37.00 per gram; intrinsic grade, 35.00-37.00 per gram.

**Gold:** U. S. Treasury, \$35 per oz.

**Indium:** 99.9%, \$2.25 per troy oz.

**Iridium:** \$75-80 nom. per troy oz.

**Lead:** Common, 10.80; chemical, 10.90; corrod'ing, 10.90, St. Louis. New York basis, add 0.20.

**Lithium:** Cups or ingots, 50-100 lb, \$10 per lb, f.o.b. Minneapolis; 100-500 lb, \$9.50 per lb del'd.

**Magnesium:** Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

**Magnesium Alloys:** AZ91A (diecasting), 40.75 del'd.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

**Mercury:** Open market, spot, New York, \$227-231 per 76 lb flask.

**Molybdenum:** Unalloyed, turned extrusion, 3.75-5.75 in. round, \$9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

**Nickel:** Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

**Osmium:** \$70-100 per troy oz nom.

**Palladium:** \$18-20 per troy oz.

**Platinum:** \$77-80 per troy oz from refineries.

**Radium:** \$16-21.50 per mg radium content, depending on quantity.

**Rhodium:** \$122-125 per troy oz.

**Ruthenium:** \$55-60 per troy oz.

**Selenium:** \$7.00 per lb, commercial grade.

**Silver:** Open market, 91.375 per troy oz.

**Sodium:** Solid pack, c.l., 19.50; i.c.l., 20.00; brick, c.l., 21.00; i.c.l., 21.50; tank car, 17.00.

**Tantalum:** Rod, \$60 per lb; sheet, \$55 per lb.

**Tellurium:** \$1.65-1.85 per lb.

**Thallium:** \$7.50 per lb.

**Tin:** Straits, N. Y., spot and prompt, 102.625.

**Titanium:** Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), \$1.62-1.82; grade A-2 (0.5% Fe max.), \$1.70 per lb.

**Tungsten:** Powder, 98.8%, carbon reduced, 1000-lb lots, \$2.75-2.90 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, \$3.30-3.80.

**Zinc:** Prime Western, 11.00; brass special 11.25; intermediate, 11.50, East St. Louis freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 12.00; special high grade, 12.25 del'd. Diecasting alloy ingot No. 3, 13.50; No. 2, 14.00; No. 5, 13.75 del'd.

**Zirconium:** Reactor grade sponge, 100 lb or less, \$7 per lb; 100-500 lb, \$6.50 per lb; over 500 lb, \$6 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

## SECONDARY METALS AND ALLOYS

**Aluminum Ingot:** Piston alloys, 23.875-25.25; No. 12 foundry alloy (No. 2 grade), 21.75-22.00; 5% silicon alloy, 0.60 Cu max, 24.75-25.00; 13 alloy, 0.60 Cu max, 24.75-25.00; 195 alloy, 25.25-26.00; 108 alloy, 22.25-22.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.75; grade 2, 22.50; grade 3, 21.25; grade 4, 19.75.

**Brass Ingot:** Red brass, No. 115, 32.25; tin No. 225, 43.25; No. 245, 37.00; high-leaded tin bronze, No. 305, 36.50; No. 1 yellow No. 405, 28.50; manganese bronze, No. 421, 29.75.

**Magnesium Alloy Ingot:** AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

## NONFERROUS PRODUCTS

### BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, \$1.91, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, \$1.89, f.o.b. Temple, Pa.

### COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 36.855; i.c.l., 37.48. Weatherproof, 20,000-lb lots, 37.42; i.c.l., 38.17.

### LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, \$16.50 per cwt; pipe, full coils, \$16.50 per cwt; traps and bends, list prices plus 30%.

### TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheet and strip, \$7.50-17.00; sheared mill plate, \$5.25-10.00; wire, \$5.75-10.00; forging billets, \$3.55-5.75; hot-rolled and forged bars, \$4.25-7.50.

### ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 26.00; ribbon zinc in coils, 21.50; plates, 20.00.

### ZIRCONIUM

Plate, \$12.50-19.20; H.R. strip, \$12.50-22.90; C.R. strip, \$15.90-31.25; forged or H.R. bars, \$11.00-17.40.

### NICKEL, MONEL, INCONEL

#### "A" Nickel Monel Inconel

Sheets, C.R. ....	126	106	128
Strip, C.R. ....	124	108	138
Plate, H.R. ....	120	105	121
Rod, Shapes, H.R. ....	107	89	109
Seamless Tubes ....	157	129	200

### ALUMINUM

Sheets: 1100, 3003 and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range Flat Coiled

Thickness	Range	Flat	Coiled
	Inches	Sheet	Sheet
0.250-0.136	42.80-47.30		
0.136-0.096	43.20-48.30		
0.126-0.103		39.20-39.80	
0.096-0.077	43.80-50.00	39.30-40.00	
0.077-0.068	44.30-52.20		
0.077-0.061		39.50-40.70	
0.068-0.061	44.30-52.20		
0.061-0.048	44.90-54.40	40.10-41.80	
0.048-0.038	45.40-57.10	40.60-43.20	
0.038-0.030	45.70-62.00	41.00-45.70	
0.030-0.024	46.20-53.70	41.30-45.70	
0.024-0.019	46.90-56.80	42.40-44.10	
0.019-0.017	47.70-54.10	43.00-44.70	
0.017-0.015	48.60-55.00	43.80-45.50	
0.015-0.014	49.60	44.80-46.50	
0.014-0.012	50.80	45.50	
0.012-0.011	51.00	46.70	
0.011-0.0095	53.50	48.10	
0.0095-0.0085	54.60	49.60	
0.0085-0.0075	56.20	50.80	
0.0075-0.007	57.70	52.30	
0.007-0.006	59.30	53.70	

## ALUMINUM (continued)

Plates and Circle: Thickness 0.250-8 in. 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.40	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

\*24-48 in. width or diam., 72-180 in. lengths

### Screw Machine Stock:

30,000 lb base. Diam. (in.) or —Round— Hexagonal— across flats\* 2011-T3 2017-T4 2011-T3 2017-T4

Diam. (in.)	Round	Hexagonal	Diam. (in.)	Round	Hexagonal
0.125	76.90	73.90	...	...	...
0.250	62.00	60.20	89.10	76.60	73.50
0.375	61.20	60.00	73.50	68.50	68.50
0.500	61.20	60.00	69.80	64.20	64.20
0.625	59.70	58.40	63.60	60.40	60.40
0.750	59.70	58.40	63.60	60.40	60.40
0.875	59.70	58.40	63.60	60.40	60.40
1.000	59.70	58.40	63.60	60.40	60.40
1.125	57.30	56.10	61.50	58.30	58.30
1.250	57.30	56.10	61.50	58.30	58.30
1.350	57.30	56.10	61.50	58.30	58.30
1.500	57.30	56.10	61.50	58.30	58.30
1.625	55.00	53.60	...	56.20	56.20
1.750	55.00	53.60	60.30	56.20	56.20
1.875	55.00	53.60	...	56.20	56.20
2.000	55.00	53.60	60.30	56.20	56.20
2.125	53.50	52.10	...	56.20	56.20
2.250	53.50	52.10	...	56.20	56.20
2.375	53.50	52.10	...	56.20	56.20
2.500	53.50	52.10	...	56.20	56.20
2.625	50.40	...	56.20	56.20	56.20
2.750	51.90	50.40	...	56.20	56.20
2.875	50.40	...	56.20	56.20	56.20
3.000	51.90	50.40	...	56.20	56.20
3.125	50.40	...	56.20	56.20	56.20
3.250	50.40	...	56.20	56.20	56.20
3.375	50.40	...	56.20	56.20	56.20

\*Selected sizes.

**Forging Stock:** Round, Class 1, random length, diam. 0.375-8 in., "F" temp.; 2014, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

**Pipe:** ASA schedule 40, alloy 6063-T6 standard length, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: 1/8 in., 18.85; 1 in., 29.75; 1 1/4 in., 40.30; 1 1/2 in., 48.15; 2 in., 58.30; 3 in., 160.20; 6 in., 287.55; 8 in., 432.70.

### Extruded Solid Shapes:

Factor	Alloy	Alloy
6063-75	6062-T6	6062-T6
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.00-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

### MAGNESIUM

**Sheet and Plate:** AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.80; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.10; .25-.75 in., 70.60-71.60. Tooling plate, .25-30 in., 73.00.

### Extruded Solid Shapes:

Factor	Com. Grade	Spec. Grade
(AZ31C)	(AZ31B)	
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

### NONFERROUS SCRAP

#### DEALERS' BUYING PRICES

(Cents per pound, New York in ton lots.) Copper and Brass: No. 1 heavy copper and wire, 26.50-27.00; No. 2 heavy copper and wire, 26.50-27.00; light copper, 22.50-23.00; No. 1 composition red brass, 21.00-21.50; No. 1 com-

### BRASS MILL PRICES

#### MILL PRODUCTS a

**SCRAP ALLOWANCES e** (Based on copper at 31.50c)

Sheet,	Strip,	Plate	Rod	Wire	Tubes	Clean	Heavy	Ends	Turnings
Copper ....	55.63b	52.86c	...	55.82	27.500	27.500	26.750		</

position turnings, 20.00-20.50; new brass clippings, 17.50-18.00; light brass, 14.00-14.25; heavy yellow brass, 15.00-15.25; new brass rod ends, 15.25-15.75; auto radiators, unsweated, 16.25-16.75; cocks and faucets, 16.75-17.25; brass pipe, 16.75-17.25.

**Lead:** Soft scrap lead, 7.25-7.75; battery plates, 3.25-3.50; linotype and stereotype, 8.75-9.25; electrolyte, 7.25-7.75; mixed babbitt, 8.75-9.25.

**Monel:** Clippings, 26.00-28.00; old sheets, 23.00-25.00; turnings, 20.00-21.00; rods, 26.00-28.00.

**Nickel:** Sheets and clippings, 52.00-54.00; rolled anodes, 52.00-54.00; turnings, 38.00-40.00; rod ends, 52.00-54.00.

**Zinc:** Old zinc, 3.00-3.25; new diecast scrap, 3.00-3.25; old diecast scrap, 1.50-1.75.

**Aluminum:** Old castings and sheets, 10.00-10.50; clean borings and turnings, 6.50-7.00; segregated low copper clips, 13.25-13.75; segregated high copper clips, 13.25-13.75; mixed low copper clips, 12.25-12.75; mixed high copper clips, 11.25-11.75.

(Cents per pound, Chicago)

**Aluminum:** Old castings and sheets, 11.75-12.25; clean borings and turnings, 9.50-10.00; segregated low copper clips, 16.75-17.25; segregated high copper clips, 15.75-16.25; mixed low copper clips, 16.00-16.50; mixed high copper clips, 15.25-15.75.

(Cents per pound, Cleveland)

**Aluminum:** Old castings and sheets, 10.50-11.00; clean borings and turnings, 9.50-10.00; segregated low copper clips, 14.50-15.00; segregated high copper clips, 13.00-13.50; mixed low copper clips, 13.50-14.00; mixed high copper clips, 12.50-13.00.

#### REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

**Beryllium Copper:** Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 57.50; light scrap, 52.50; turnings and borings, 37.50.

**Copper and Brass:** No. 1 heavy copper and wire, 29.50; No. 2 heavy copper and wire, 28.00; light copper, 25.75; refinery brass (60% copper) per dry copper content, 28.25.

#### INGOTMAKERS' BUYING PRICES

**Copper and Brass:** No. 1 heavy copper and wire, 29.50; No. 2 heavy copper and wire, 28.00; light copper, 25.75; No. 1 composition borings, 22.50; No. 1 composition solids, 23.00; heavy yellow brass solids, 17.00; yellow brass turnings, 16.00; radiators, 18.00.

## PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

### ANODES

**Cadmium:** Special or patented shapes, \$1.45.

**Copper:** Flat-rolled, 47.79; oval, 46.00, 5000-10,000 lb; electrodeposited, 42.50, 2000-5000 lb lots; cast, 45.00, 5000-10,000 lb quantities.

**Nickel:** Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

**Tin:** Bar or slab, less than 200 lb, 120.50; 200-199 lb, 119.00; 500-999 lb, 118.50; 1000 lb or more, 118.00.

**Zinc:** Balls, 18.00; flat tops, 18.00; flats, 20.75; ovals, 20.00, ton lots.

### CHEMICALS

**Cadmium Oxide:** \$1.45 per lb in 100-lb drums.

**Chrome Acid (flake):** 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

**Copper Cyanide:** 100-200 lb, 65.90; 300-900 lb, 63.00; 1000-19,900 lb, 61.90.

**Copper Sulfate:** 100-1900 lb, 15.30; 2000-5900 lb, 13.30; 6000-11,900 lb, 13.05; 12,000-22,900 lb, 12.80; 23,000 lb or more, 12.30.

**Nickel Chloride:** 100 lb, 45.00; 200 lb, 43.00; 300 lb, 42.00; 400-4900 lb, 40.00; 5000-9900 lb, 38.00; 10,000 lb or more, 37.00.

**Nickel Sulfate:** 5000-22,999 lb, 29.00; 23,000-39,999 lb, 28.50; 40,000 lb or more, 28.00.

**Sodium Cyanide (Cyanobrik):** 200 lb, 20.80; 100-800 lb, 19.80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.

**Sodium Sulfate:** Less than 100 lb, 79.50; 100-300 lb, 70.20; 700-1900 lb, 67.40; 2000-9900 lb, 35.00; 10,000 lb or more, 64.20.

**Stannous Chloride (Anhydrous):** 25 lb, 155.00; 100 lb, 150.10; 400 lb, 147.70; 800-19,900 lb, 106.80; 20,000 lb or more, 100.70.

**Stannous Sulfate:** Less than 50 lb, 140.20; 50 lb, 110.20; 100-1900 lb, 108.20; 2000 lb or more, 106.20.

**Zinc Cyanide:** 100-200 lb, 59.00; 300-900 lb, 57.00.

(Concluded from Page 209)

Sharon Steel Corp. has blown in a second blast furnace at its Roemer Works, Farrell, Pa., after a relining job. The furnace had a break-out about a month ago, just after the other furnace there was blown in.

## Distributors . . .

Prices, Page 204

Final accounting for March will show an increase over February of up to 20 per cent in bookings by steel service centers. Part of the gain is attributed to improved weather which has permitted more activity in the construction and agricultural industries.

Inventories are in good shape and no product is in particularly strong demand. Distributors think a marked upturn in consumption would help them more than the current buildup of users' inventories. Reason: Stockpiling is planned far in advance and most of the orders go to mills. If there were a sudden pickup in any major consuming industry, users would have to augment mill purchases at steel service centers.

"We cash in on sudden changes in immediate needs," a distributor comments. "We get the spillover business that mills can't handle." Distributors anticipate a flurry of orders in June when buyers are ex-

pected to make last minute preparations for a possible steel strike.

Some price weakness has developed in the Southwest, due to scattered forced selling by importers.

## Wire . . .

Wire Prices, Pages 200 & 201

Wiremakers' bookings are up noticeably, some mills reporting their March volume was the best in more than a year. April-May shipment tonnage is at least 15 per cent over the March total in New England, and sellers in other areas are doing about as well.

While consumers are engaging in some hedge buying of cold heading, spring, and manufacturers' wire, June order books still have openings for late tonnage placement. Most mills are handling additional tonnage without adding to production crews. The bulge in buying is not heavy enough to substantially extend shipment promises, except for some specifications requiring longer processing.

Screw and fastener demands are up, notably auto requirements.

Wickwire Spencer Div., Colorado Fuel & Iron Corp., Buffalo, has booked an \$890,310 contract for nearly 25.5 million linear feet of steel wire strand from the U. S. Engineer, Memphis, Tenn.

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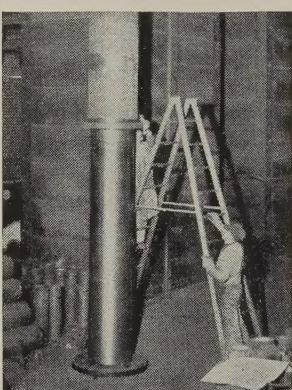
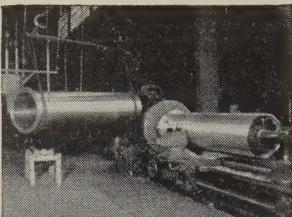
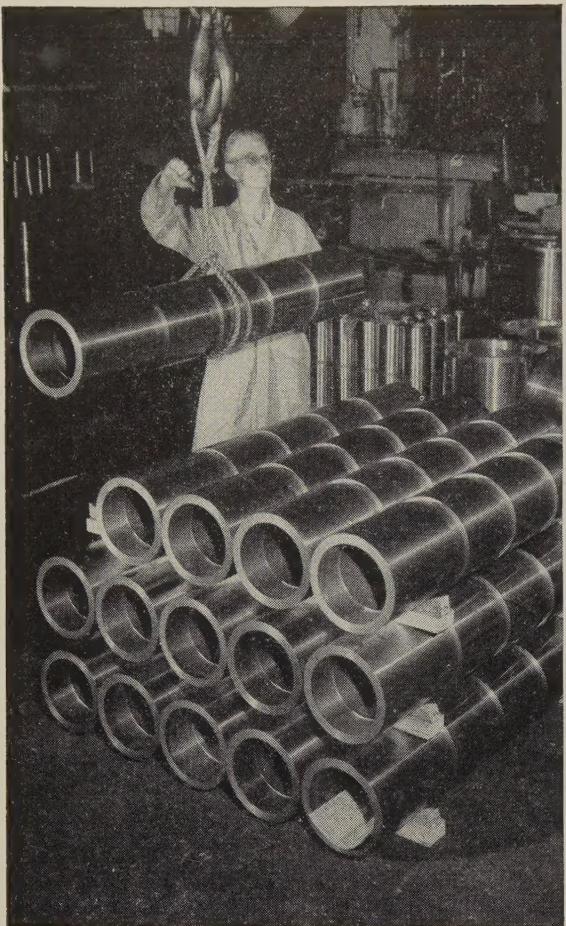
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